

1960

CRPL-F 191 PART B

FOR OFFICIAL USE

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PART B  
SOLAR - GEOPHYSICAL DATA

ISSUED  
JULY 1960

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## SOLAR - GEOPHYSICAL DATA

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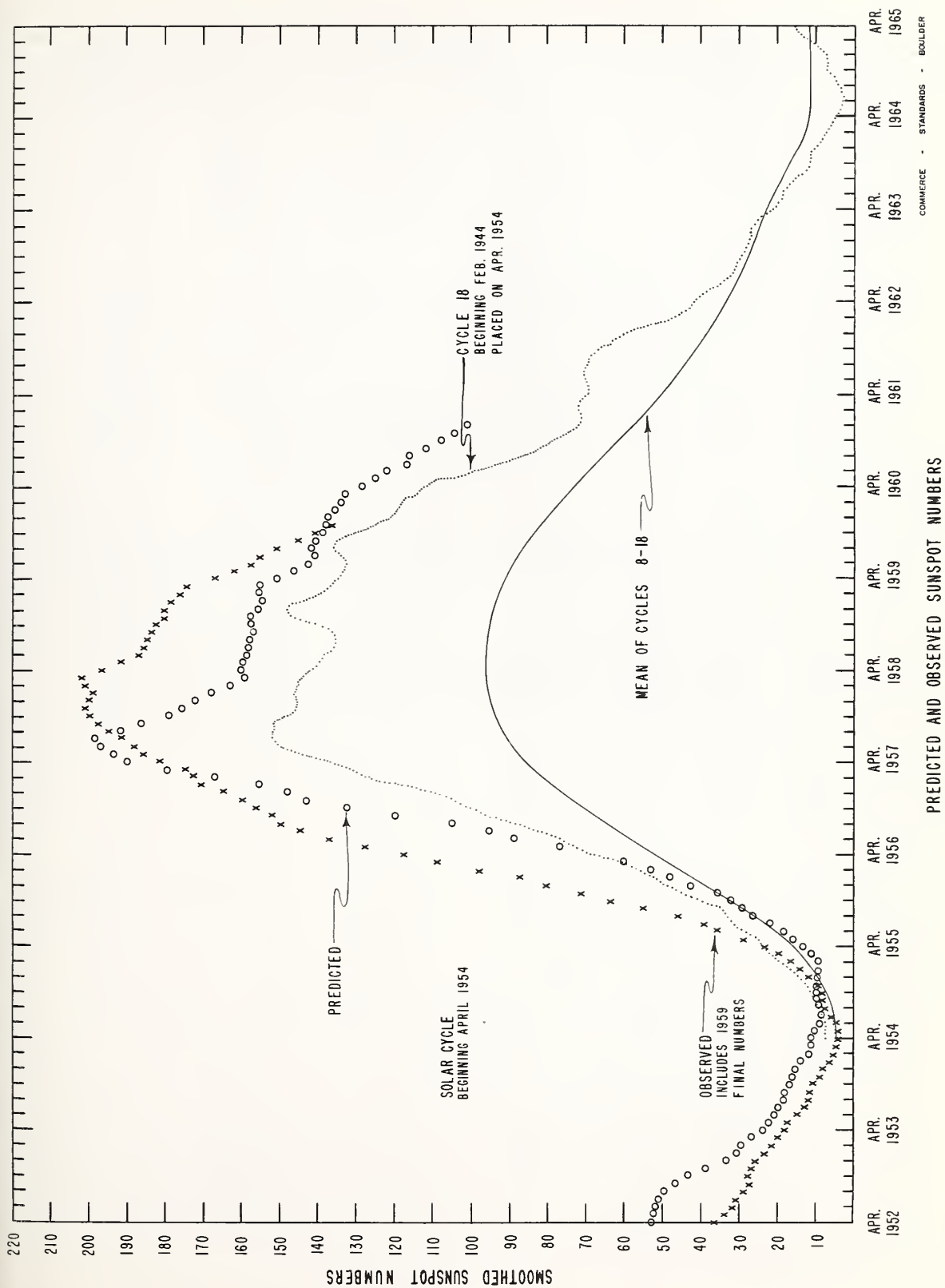
## INTRODUCTION

The descriptive text is published periodically or whenever context of the report is changed. The last issue in which the text appeared was CRPL-F189 Part B issued May 1960;

## DAILY SOLAR INDICES

May 1960	American Relative Sunspot Numbers $R_A'$
1	96
2	96
3	102
4	93
5	90
6	90
7	105
8	117
9	144
10	123
11	126
12	111
13	95
14	79
15	89
16	106
17	89
18	89
19	92
20	100
21	84
22	116
23	129
24	127
25	107
26	122
27	118
28	102
29	98
30	96
31	95
Mean:	104.1

June 1960	Zürich Provisional Relative Sunspot Numbers $R_Z$	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	100	166
2	90	167
3	109	167
4	113	172
5	99	170
6	109	175
7	123	185
8	113	185
9	118	181
10	147	178
11	142	171
12	155	167
13	131	162
14	131	166
15	144	166
16	138	157
17	105	153
18	91	139
19	81	140
20	60	133
21	56	131
22	50	130
23	58	136
24	68	132
25	80	140
26	99	155
27	116	164
28	140	184
29	147	190
30	165	194
Mean:	109.3	161.9



## CALCIUM PLAGE AND SUNSPOT REGIONS

JUNE 1960

CMP June 1960	Lat	McMath Plage Number	Return of Region	Calcium Plage Data				Sunspot Data			
				CMP Values Area Int.		History, Age		CMP Values Area Count		History	
30.5+	S14	5686	New	(200)	(1)	b / l	1	(50)	(1)	b ^ d	
01.3	S18	5677	New	1200	2.5	b / l	1	220	3	b ^ d	
02.0	N12	5678	*	2500	2.5	l - l	2	150	3	b ^ d	
03.0	S12	5679	5653	4000	3.5	l - l	3	570	7	l - l	
04.0	N06	5687	New	600	3.5	b / l	1	680	12	b / l	
04.2	S16	5681	5653	(500)	(2)	l \ d	3				
04.6	N29	5680	5654	6800	3	l - l	2	240	11	l - l	
05.5	S13	5682	5655	(1000)	(1.5)	l \ d	2				
06.2	N13	5683	5656	(900)	(1)	l \ d	3				
06.5	N28	5684	5654	(600)	(1)	l \ d	2				
06.7	N08	5688	5656	700	2.5	l - l	3	160	6	l \ d	
07.0	N28	5699	New	(1000)	(2.5)	b / l	1				
07.9	N12	5689	5656	1000	1.5	l \ l	3				
08.1	S08	5690	5657	1000	1.5	l - l	4				
09.5	S13	5691	5657	2200	2.5	l - l	4				
10.0	N12	5692	5658	1400	2.5	l - l	8	20	1	b ^ d	
11.8	S14	5696	New	1200	2.5	b / l	1	120	6	b ^ d	
11.8	S11	5708	New	(600)	(3)	b / l	1	(120)	(2)	b / l	
12.3	N16	5693	5660	5000	2.5	l - l	3	200	18	l - l	
14.1	N18	5694	New	3900	2.5	l - l	1	630	10	l - l	
14.5	N08	5698	5661	300	1.5	l / l	3				
15.7	S13	5695	5663	8600	3	l - l	2	1010	9	l \ l	
16.9	N13	5718	New	(800)	(2.5)	b / l	1				
17.7	N23	5700	5664	(1200)	(1)	l \ d	2				
18.3	N01	5702	5668	600	2	l \ d	2				
18.5	N18	5701	5671	1100	2	l - l	2	120	3	b ^ d	
18.5	S15	5703	5667	500	1.5	l \ d	7				
19.0	N00	5704	5673	500	2	l \ d	2				
19.1	S07	5705	5667	200	1.5	l \ d	7				
19.5	S15	5709	5667	(100)	(1.5)	l \ d	7				
21.1	N17	5706	5669	4100	3	l - l	4	70	1	l / l	
21.8	S16	5707	New	900	2.5	l - l	1	(20)	(1)	b ^ d	
22.1	N10	5710	5672	300	2.5	l ^ d	2	20	1	l \ d	
23.1	S12	5711	5670	1600	2	l \ l	4				
23.3	N05	5712	5670	700	1.5	l \ d	4				
24.8	S03	5714	5670	200	1	l \ d	4				
25.1	N11	5723	New	200	2	b / l	1				
26.4	N18	5713	New	2400	3.5	l - l	1	730	5	l - l	
27.0	N03	5716	5676	600	2	l \ d	2	(20)	(1)	l \ d	
27.7	N07	5733	New	300	2	b / l	1				
29.5	N08	5720	5678	2800	3	l - l	3	190	2	l \ d	
29.6	S08	5719	5679	3000	3	l - l	4	220	1	l - l	
30.4	N08	5721	5687	2200	3	l - l	2				
30.4	S16	5725	New	1800	3.5	b / l	1	290	8	b / l	

COMMERCE - STANDARDS - BOULDER

+ born on disk CMP in May.

\* 5649 and 5652.



# PROVISIONAL CORONAL LINE EMISSION INDICES

JUNE 1960

CMP Jun 1960	North East Quadrant (observed 7 days earlier)						South East Quadrant (observed 7 days earlier)						South West Quadrant (observed 7 days later)						North West Quadrant (observed 7 days later)					
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>
1	81	126	24	41	40	63	9	11	9	11	40	63	9	11	9	11	40	63	9	11	9	11	40	63
2	42a	64a	24a	25a	20a	26a	18a	22a	18a	22a	20a	26a	18a	22a	18a	22a	20a	26a	18a	22a	18a	22a	20a	26a
3	x	x	17a	34a	x	x	16a	29a	x	29a	x	x	16a	29a	x	29a	x	x	16a	29a	x	29a	x	x
4	64	89	11	21	51	85	8	10	8	10	51	85	8	10	8	10	51	85	8	10	8	10	51	85
5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	61a	74a	19a	20a	72a	100a	13a	20a	13a	20a	72a	100a	13a	20a	13a	20a	72a	100a	13a	20a	13a	20a	72a	100a
8	46	66	14	25	55	72	14	20	13	20	55	72	14	20	13	20	55	72	14	20	13	20	55	72
9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	78	94	x	x	61	100	x	x	x	x	61	100	x	x	x	x	61	100	x	x	x	x	61	100
11	83	94	15	24	51	60	11	15	11	15	51	60	11	15	11	15	51	60	11	15	11	15	51	60
12	100	128	x	x	51	85	x	x	x	x	51	85	x	x	x	x	51	85	x	x	x	x	51	85
13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	91	123	16	20	51	96	13	25	13	25	51	96	13	25	13	25	51	96	13	25	13	25	51	96
15	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
18	45	68	12	19	59	80	9	10	9	10	59	80	9	10	9	10	59	80	9	10	9	10	59	80
19	33	46	x	x	12	18	x	x	x	x	12	18	x	x	x	x	12	18	x	x	x	x	12	18
20	128	170	19	24	60	69	5	6	5	6	60	69	5	6	5	6	60	69	5	6	5	6	60	69
21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	40	57	13a	33a	71	96	17a	23a	17a	23a	71	96	17a	23a	17a	23a	71	96	17a	23a	17a	23a	71	96
24	23a	27a	24a	37a	44a	57a	25a	49a	25a	49a	44a	57a	25a	49a	25a	49a	44a	57a	25a	49a	25a	49a	44a	57a
25	30	45	27	51	36	46	26	46	26	46	36	46	26	46	26	46	36	46	26	46	26	46	36	46
26	73a	99a	x	x	61a	76a	x	x	x	x	61a	76a	x	x	x	x	61a	76a	x	x	x	x	61a	76a
27	66a	94a	x	x	69a	125a	x	x	x	x	69a	125a	x	x	x	x	69a	125a	x	x	x	x	69a	125a
28	80	139	25a	38a	80	162	22a	49a	22a	49a	80	162	22a	49a	22a	49a	80	162	22a	49a	22a	49a	80	162
29	99	190	x	x	109	144	x	x	x	x	109	144	x	x	x	x	109	144	x	x	x	x	109	144
30	86	133	x	x	95	123	x	x	x	x	95	123	x	x	x	x	95	123	x	x	x	x	95	123

x = no observations. a = index computed from low weight data. \* = yellow line observed.

Note: These coronal line intensities, expressed in millionths of equivalent angstroms are believed to be correct to  $\pm 10$  per cent, probable error, according to the calibrations of February-March 1960. All intensities from the Climax and Sacramento Peak Observatories during the years 1956-1959, inclusive, if multiplied by the factor 0.60, will be expressed in the same scale to a somewhat lower precision.

Intensities prior to 1956 cannot be compared precisely with those obtained later because of changes in observing and reduction techniques. They may be converted roughly to millionths of equivalent angstroms by use of the table given by Billings and Varsavsky, 1955, Zs. f. Ap. 38, 160.

# SOLAR FLARES

## JUNE 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				MC-MATH PLACE REGION	TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Ha	MAX. INT. %
{ CAPRI S KRASNYA ARCTETRI SCHAUINS WENDEL R O HERST NEDERHORST OFDREJOV ARCTETRI MCMATH SAC PEAK ONDREJOV HUANCAYO HUANCAYO MCMATH WENDEL { MCMATH STOCKHOLM STOCKHOLM { MCMATH HAWAII SAC PEAK WENDEL SAC PEAK ONDREJOV WENDEL ONDREJOV { CAPRI S ONDREJOV CAPRI S ARCTETRI STOCKHOLM WENDEL { CAPRI S ARCTETRI WENDEL CAPRI S	01	0824	1340	N28	E46	5680	316	3+	3	0903	18.00	31.00		Slow S-SWF		
	01	0833 E	1003		N26	E44	5680	90 D	3		0904	20.60	32.60			
	01	0834 E	1009 D		N30	E48	5680	95 D	3							
	01	0835	1030 D		N30	E50	5680	115 D	3							
	01	0841 E	1308 D	0905	N27	E47	5680	267 D	3+						Slow S-SWF	
	01	0848 E	1040	0900 U	N29	E43	5680	112 D	3+			15.00	24.00	2.94		140
	01	0855	0945 D		N29	E48	5680	50 D	3+							
	01	0945 E	1135 D		N29	E39	5680	110 D	2+	1	1118			2.30		
	01	1037 E	1154 D		N29	E45	5680	77 D	2	1	1154					Slow S-SWF
	01	1106 E	1230 D		N27	E44	5680	84 D	2	1	1115					
	01	1247 E	1600 U	1247 E	N29	E43	5680	193 D	2	2		6.34				
	01	1646	1711	1655	N30	E45	5680	25	1+	3	1655			2.60		
	01	1649 E	1728	1657	N32	E45	5680	39 D	1	2	1657	1.80	3.20	3.80		Slow S-SWF
	01	1649	1700	1651	N13	E02	5678	11	1	2	1652	2.10	2.20	2.70		
	01	1804 E	1815 D		N07	W90	5672	11 D	1P	1						
	01	2039	2150 D	2054	N18	W90	5672	71 D	1P	1						
	03	0536 E	0603 D		S18	W30	5677	27 D	1					3.00		S-SWF
	03	1107	1119 D		S08	W07	5679	12 D	1	3	1111	3.00	3.10			
	03	1109 E	1125 D		S12	W06	5679	16 D	1	1	1110			2.00		
	03	1212	1223 D		N15	E35	5688	11 D	1	3	1214	1.80	2.50			
	03	1244	1302 D		N15	E35	5688	18 D	1	3	1247	2.10	2.90			S-SWF
	03	1900	1915	1903	N29	E15	5680	15	1	2	1903			2.00		
	03	1902	1914	1904	N34	E12	5680	12	1	2	1904	1.10				
	04	1426	1508	1438	N27	W04	5680	42	1	3		2.72			14	
	05	1351 E	1413 D		N27	W18	5680	22 D	1							S-SWF
	05	2217	2346 U	2224	N26	W24	5680	89 U	2	1		5.84	4.00		28	
	06	0455 E	0605	0458	N33	W10	5680	70 D	2	3	0458			3.40		
	06	0551	0608	0553	S12	W36	5679	17	1	3	0553			2.70		
06	0858 E	0929 D		N07	W50	5687	31 D	1					3.00		S-SWF	
06	1410 E	1420		N08	W59	5678	10 D	1	3	1410			2.20			
06	1732 E	1744 D		S08	W50	5679	12 D	1					3.00			
06	2232 E	2234 D		N29	W23	5680	2 D	1	2	2232	1.20					
07	0610 E	0622		N33	W22	5680	12 D	1	2	0610			1.50		Slow S-SWF	
07	0829	0846		N10	E64	5693	17	1	3	0832			2.60			
07	0831 E	0842		N12	E66	5693	11 D	1	2	0834			3.60			
07	0958	1150		N27	W45	5680	112	1+	1	1040			2.60			
07	1002	1158		N25	W38	5680	116	1	3	1044	2.50	3.30			Slow S-SWF	
07	1015 E	1032 D		N26	W46	5680	17 D	1	3	1015	2.50	3.70				
07	1046 E	1103 D		N26	W28	5680	17 D	1	3	1050	3.00	3.90				
08	0732 E	0828 D		N29	W37	5680	56 D	2+					15.00			
08	0736	0827		N33	W37	5680	51	2+	3	0750	7.00	11.20			Slow S-SWF	
08	0802 E	0823 D		N32	W36	5680	21 D	1+	3				4.00			
08	0759	0828 D		S10	W74	5679	29 D	1					3.00			
08	0956 E	1038 D		N12	E52	5693	42 D	1					5.30			
08	1125	1205		N29	W33	5680	40	2	3	1137	3.50					

# SOLAR FLARES

JUNE 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MER. DIST.				MONTH PLACE REGION	TIME — U T	MEAS. AREA Sq. Deg.	COBR. AREA Sq. Deg.		MAX. WIDTH H <sub>z</sub>
{ MCMATH WENDEL MCMATH HUANCAYO HAWAII HAWAII LOCKHEED	08	1125	1220 D	N30 W35		5680	55 D	2	1138		2.00			Slow S-SWF
	08	1135 E	1215 D	N29 W37		5680	40 D	1+			8.00		24	
	08	1746	1906 U	N29 W39		5680	80 U	2		7.35				
	08	1748	1900	N30 W36		5680	72	2	1756		6.00			
	08	1750	1837	N28 W36		5680	47	2	1755	5.20	7.20	4.50		
	08	1750	1926	N26 W41		5680	96	2	1758	4.30				
	08	2034	2038	S06 E83		5695	4	1	2036	.90				
	08	2055	2205	S12 E90		5695	70	1	2120	2.00			10	
	09	0145	0230 D	N32 W48		5680	45 D	1	0200	2.20			20	
	09	0156	0200 D	N28 W48		5680	4	1	0158	1.00				
{ ONDREJOV CAPRI S ONDREJOV ONDREJOV NIDERHORST ONDREJOV ARCETRI MCMATH LOCKHEED	09	0437	0547	N31 W48		5680	70	2	0453			2.70		Slow S-SWF
	09	0624 E	0638 D	N31 W50		5680	14 D	1	0626			2.30		
	09	0626 E	0636 D	N33 W46		5680	10 D	1	0628	1.20	2.30			
	09	0927 E	0954 D	N31 W49		5680	27 D	1+	0927			2.20		
	09	1004 E	1014	N28 W48		5680	10 D	1+	1005			2.90		
	09	1015	1022 D	N11 E78		5698	7 D	1				5.20		
	09	1015 E	1032	S10 E74		5695	17 D	1	1017					
	09	1018 E		S11 E79		5695	1	3			2.00			
	09	1745	1815	S13 E75		5695	30	1	1752					
	09	2010	2130	N30 W57		5680	80	1	2037	2.10			20	
{ MCMATH HAWAII SAC PEAK LOCKHEED MCMATH HAWAII LOCKHEED HAWAII	09	2015	2150 D	N31 W57		5680	95 D	1	2031		3.00			Slow S-SWF
	09	2024 E	2122	N25 W58		5680	58 D	1+	2034	2.10			18	
	09	2042 E	2116	N32 W57		5680	34 D	1		2.41			20	
	09	2035	2200	S09 E73		5695	85	1	2043	3.20				
	09	2036	2210	S12 E75		5695	94	1+	2040		4.00			
	09	2038	2058	S05 E72		5695	20	1+	2043	2.00				
	09	2314	2345	N33 W57		5680	31	1	2320	2.40			20	
	09	2316 E	2336	N27 W59		5680	20 D	1+	2318	1.80				
	10	0132	0200 D	N15 E27		5693	28 D	1+	0144		2.00			
	10	0635 E	0730	N30 W60		5680	55 D	2	0640	3.00	7.20			
{ R O HERST CAPRI S CAPRI S STOCKHOLM MCMATH ARCETRI MCMATH SAC PEAK MCMATH LOCKHEED SAC PEAK MCMATH	10	0932 E	1000	N30 W62		5680	28 D	1	0936	1.40	3.60			G-SWF
	10	0935 E	1049 D	N30 W62		5680	74 D	2	1001	4.00	10.00			
	10	0937 E	0947 D	N29 W55		5680	10 D	2+	0947	5.00	10.00			
	10	1435	1500 D	S12 E65		5695	25 D	1	1443		2.00			
	10	1505 E		N09 W90		5687	1	3	1505	.50	2.40			
	10	1546	1640	N12 E25		5693	54	1	1602		2.00			
	10	1552 E	1616 D	N12 E27		5693	24 D	1		2.45			18	
	10	1702	1720	N32 W70		5680	18	1	1708		2.50			
	10	1949	2130	N30 W70		5680	101	1	1955	2.00			30	
	10	1956 E	2024 D	N30 W70		5680	28 D	1		2.08			18	
{ HAWAII LOCKHEED WENDEL CAPRI S HAWAII HAWAII LOCKHEED	10	2004 E	2110	N30 W70		5680	66 D	1	2015		3.00			G-SWF
	11	0112	0200 D	N18 E16		5693	48 D	2+	0124	5.60				
	11	0115 E	0235 D	N16 E17		5693	80 D	2	0115	8.20			30	
	11	1422 E	1444 D	S08 E58		5695	22 D	1			3.00			
	11	1507 E	1513	N26 W75		5680	6 D	1	1511	.70	3.20			
	11	1928	2010	N15 E05		5693	42	1	1950	1.00				
	11	1952	2038	N27 W90		5680	46	1	1954	1.00				
	11	2220	2315	S11 E54		5695	55	1	2237	2.00			20	

# SOLAR FLARES

JUNE 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX.					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>z</sub>	MAX. INT. %	
					LAT.	MER. DIST.								
{ MCMATH HAWAII  CAPRI S SAC PEAK LOCKHEED HAWAII  LOCKHEED SAC PEAK	11	2225	2300 D	S13	E52	5695	35 D	1	1	2230	1.00	2.00		
	11	2242 E	2308	S04	E54	5695	26 D	1	3	2242				
	12	0600 E	0720	S14	E53	5695	80 D	2	3	0605	6.00	10.20		24
	12	1356	1442	N30	W90	5680	46	1	3		3.93			20
	12	1900	1955	N35	W90	5680	55	1	3	1927	2.00			
	12	1924	1934	N32	W90	5680	10	1	3	1928	4.0			
	12	1905	2000	N21	E04	5693	55	1	2	1916	2.20			10
	12	2326	2340 D	N20	E20	5694	14 D	1	3		3.16			18
	13	0023	0054	S14	E36	5695	31	1	2	0030	1.20			10
	13	0547 E	0633 D	S17	W18	5696	46 D	1			4.00			
	13	0556 E	0645	S20	W20	5696	49 D	1	3	0559			2.30	
	13	0725	0755	N18	W30	5693	30	2	3	0736			3.80	
{ WENDEL CAPRI S WENDEL CAPRI S CAPRI S CAPRI S ONDREJOV WENDEL ONDREJOV CAPRI S SAC PEAK	13	0731	0813	N18	W27	5693	42	2			11.00			
	13	0731	0834	N18	W27	5693	63	2	3	0740	5.80			
	13	0759	0818	N12	W16	5693	19	1+			7.00			
	13	0759	0818	N08	W21	5693	19	1	3	0808	3.00			
	13	1028	1051	S12	W30	5691	23	1	3	1038	2.50			
	13	1036 E	1048 D	S09	E32	5695	12 D	1+	3	1040	3.00		2.60	
	13	1237 E	1305 D	N18	W30	5693	28 D	1	3		4.00			
	13	1238	1257	N17	W29	5693	19	1		1239			2.30	
	13	1239 E	1250	N18	W29	5693	11 D	1	3	1242	2.00			20
	13	1708	1800	N17	W34	5693	52	2	3		4.36			
	14	0001	0045	N08	W36	5693	44	1	2	0015	2.30			
	14	0014 E	0042	N14	W38	5693	28 D	1	2	0014	1.70			30
{ STOCKHOLM CAPRI S CAPRI S CAPRI S HUANCAYO HUANCAYO HUANCAYO HUANCAYO HAWAII LOCKHEED MCMATH LOCKHEED HAWAII	14	1048 E	1104	N15	W28	5693	16 D	1	2	1049	2.00			
	14	1055 E	1103 D	N10	W30	5693	8 D	1	2	1057	3.50			
	14	1337 E	1408	S10	E16	5695	31 D	1	3	1345	2.00			
	14	1338 E	1446	S10	E18	5695	68 D	1	2	1340	2.30		2.60	
	14	1727	1740 D	S13	E20	5695	13 D	1	1	1736	2.70			20
	14	1730	1749	S11	E24	5695	19	1	2	1737	2.20		4.40	
	14	1825	1850	S12	E19	5695	25	1+	2	1828	4.20		2.80	
	14	1826	1838 D	S08	E20	5695	12 D	1	2	1826	1.90			
	14	1831 E	1834 D	S13	E20	5695	3 D	1	2	1832	2.30			20
	14	1838 E	1842 D	S11	E19	5695	4 D	1	1	1838				
	14	2200	2323	S14	E08	5695	83	1+	2	2228	4.20			20
	14	2202	2316	S10	E11	5695	74	2	2	2226	2.50			
{ CAPRI S LOCKHEED HAWAII  CAPRI S ONDREJOV CAPRI S CAPRI S STOCKHOLM SAC PEAK ONDREJOV	15	0635 E	0749	S09	E08	5695	74 D	2	2	0702	5.50			
	15	2347	0030	N18	E35	5701	43	1	1	2356	2.00			20
	15	2348	0036	N23	E33	5701	48	1+	3	2354	2.00			
	16	0647	0710	S12	W02	5695	23	2	3	0700	5.50		2.80	
	16	0649 E	0719	S11	E01	5695	30 D	2	3	0650				
	16	0730	0736	N15	E67	5706	6	1	3	0733	1.00			2.60
	16	0808	0950	N12	E65	5706	102	2	3	0908	3.00		6.90	
	16	1037 E	1044	S13	W05	5695	7 D	1	3	1039	2.00		2.10	
	16	1338	1406	N20	W70	5693	28	1	2					
	16	1338	1406	N20	W70	5693	28	1	2					
	16	1339	1402	N20	W65	5693	23	2	3	1342	2.83		3.80	17

# SOLAR FLARES

JUNE 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	LAT.	APPROX.					TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha		MAX. INT. %	
						MER. DIST.	MC-MATH PLAGE REGION										
{CAPRI S ONDREJOV MCWATH HAWAII LOCKHEED HAWAII	16	1344 E	1351		N12 W67		5693	7 D	1	3	1347	1.20	3.40	2.20			
	16	1527 E	1537		N21 E59		5706	10 D	1	3	1532						
	16	1848	1900 D		N18 E34		5701	12 D	1	1	1900		2.50				
	16	1854 E	1924	1900	N14 W36		5694	30 D	2		1900	3.50			30		
	16	2250	0000	2310	S12 W17		5695	70	1	2	2310	3.20					
	16	2252	2342		S14 W16		5695	50	1	2	2314	1.50					
	{LOCKHEED HAWAII CAPRI S WENDEL STOCKHOLM ARCETIRI WENDEL WENDEL	17	0010	0108 U	0035	N17 W37		5694	58 U	1	2	0035	2.30			20	
		17	0024	0054 D	0028	N12 W39		5694	30 D	1	2	0028	1.60				
		17	0935	1110 D		N17 E55		5706	95 D	2	3	1006	3.00	5.40			
		17	0936	1039 D		N18 E56		5706	63 D	2			8.00				
17		0947 E	1129 D		N21 E50		5706	102 D	1+	2	1000	2.30	4.20				
{LOCKHEED HAWAII ONDREJOV ONDREJOV WENDEL	17	1005 E	1024 D		N17 E56		5706	19 D	1	3	1009	1.70	2.80				
	17	1520 E	1535 D		N18 W45		5694	15 D	1			4.00					
	17	1602	1636 D		N18 W46		5694	34 D	1			4.00					
	18	0010	0145	0042	S12 W33		5695	95	1	2	0042	3.70			10		
	18	0026 E	0040 D		S15 W31		5695	14 D	1	1	0040	1.10					
	18	0537 E	0557		N20 W50		5694	20 D	1+	3	0543		3.10				
	18	1402 E	1417 D		N22 W53		5694	15 D	1	3	1404		2.00			G-SWF	
	18	1751	1808 D		S13 W45		5695	17 D	1				4.00				
	{LOCKHEED CAPRI S CAPRI S WENDEL CAPRI S MCWATH HUANCAYO CAPRI S LOCKHEED	19	0153	0230	0208	N19 W65		5694	37	1	1	0208	2.50			20	
		19	1001	1035		S12 W47		5695	34	1	3	1007	3.00	4.80			
19		1039	1108		N24 E90		5713	23	1	3	1043	.40					
19		1330 E	1354 D		S12 W51		5695	24 D	1+			5.00					
19		1333 E	1353		S15 W50		5695	20 D	1	3	1335	2.00	3.40			S-SWF	
19		1334 E	1352	1335	S11 W53		5695	18 D	1	1	1335	2.70					
19		1541	1614	1544	S11 W49		5695	33	2	2	1544	3.50	5.50	3.50		G-SWF	
19		1545 E	1616		S12 W50		5695	31 D	1	3	1547	3.00	5.00				
19		2127	2205	2138	N15 E84		5713	38	1	3	2138	2.00			10		
{LOCKHEED CAPRI S WENDEL WENDEL WENDEL ONDREJOV ONDREJOV WENDEL CAPRI S MOSCOW G ONDREJOV MOSCOW G		20	0126	0205	0129	S13 W59		5695	39	2	2	0129	5.00	3.30		40	
	20	0642 E	0652 D		S13 W63		5695	10 D	1	1	0647	1.50					
	22	0815	0845 D		N22 W45		5701	30 D	1				4.00				
	23	1627 E	1643		N22 E30		5713	16 D	1				3.00				
	24	0921 E	0939 D		N13 W40		5706	18 D	1				4.00				
	24	0927 E	1004		N11 W38		5706	37 D	1	2	0928			3.10			
	24	1307 E	1313 D		N20 E14		5713	6 D	1	3	1309			2.60			
	24	1307 E	1316		N08 E64		5720	9 D	1	3	1308			2.60			
	24	1606 E	1615 D		N11 W45		5706	9 D	1				4.00				
	25	0709	0728	0712	N20 E09		5713	19	2	2	0717	7.00	7.70				
{CAPRI S ONDREJOV CAPRI S MOSCOW G ONDREJOV MOSCOW G	25	0709 E	0743 D	0712	N20 E09		5713	34 D	2	3	0712			3.00			
	25	1026 E	1045		N18 E03		5713	19 D	1+	3	1030	4.00					
	25	1027 E	1046		N18 E04		5713	19 D	1	3			4.00				
	25	1028 E	1046		N19 E02		5713	18 D	2	3				3.70			
	25	1133 E	1300		N19 E09		5713	87 D	2+		1029						

COMMENCE - STANDARDS - BOULDER



SOLAR FLARES  
JUNE 1960

OBSERVATORY	DATE JUNE 1960	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG. DIST.				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>z</sub>	MAX. INT. %
{ CAPRI S WENDEL MCMATH ONDREJOV CLIMAX SAC PEAK LOCKHEED SAC PEAK MCMATH SAC PEAK LOCKHEED SAC PEAK MCMATH HAWAII HAWAII	25	1136	1330 D	N20	E06	5713	3	3	1217	12.00	12.60		
	25	1136 E	1332 D	N22	E06	5713	3	3	1215		23.00		
	25	1136	1530	N20	E05	5713	2+	3	1222		8.00	3.80	
	25	1143 E	1458 D	N22	E05	5713	1	1					
	25	1232 E	1333 D	N26	E04	5713	2+	1					
	25	1259 E	1518	N20	E07	5713	2+	1					
	25	1659	1739	N19	E00	5713	1	3	1706	7.48			27
	25	1700	1736	N19	W01	5713	1	3					30
	25	1700	1740	N19	W01	5713	1+	2	1709	4.55	2.00		30
	25	1948	2024	N20	W03	5713	1	2					19
{ LOCKHEED SAC PEAK MCMATH HAWAII HAWAII	25	2039	2128	N19	W03	5713	2	3	2046	2.10			30
	25	2042	2130	N18	W04	5713	3	2	2047	7.00			34
	25	2042	2140	N20	W04	5713	2+	2					
	25	2105 E	2123 D	N18	W04	5713	1	1	2106	1.50	9.00		
	25	2158	2202	N07	W58	5706	1	2	2200	1.10			
	26	0124	0134	N38	E90	5724	1	3	0128	1.00			
	26	0805 E	0830 D	N20	W07	5713	1	3			3.00		
	26	1110	1215	N27	E75	5724	1+	2	1136				
	26	1115 E	1212	N27	E71	5724	2	1	1118	2.00	8.00		
	26	1304 E	1314 D	N12	W66	5706	10 D	1			4.00		
{ CAPRI S WENDEL MCMATH LOCKHEED SAC PEAK MCMATH LOCKHEED SAC PEAK MCMATH LOCKHEED	26	1326	1440	N20	W14	5713	2+	3	1412	10.26	6.00		25
	26	1349	1442	N17	W11	5713	2	3					
	26	1350	1443	N20	W13	5713	53	2					
	26	1350	1445	N19	W14	5713	55	2	1404	3.40	1.400		
	26	1425 E	1525	N19	W13	5713	60 D	2	1404	9.00			
	26	2032	2142	N19	W16	5713	70	2	2100	4.50			20
	26	2044	2124	N20	W15	5713	40	2	2102	8.48			20
	26	2049 E	2220	N19	W16	5713	91 D	3			3.50		26
	26	2358	0200	S10	E33	5719	122	2	0010	16.00			20
	27	0002	0057 D	S07	E35	5719	55 D	2	0023	7.60			
{ ONDREJOV CAPRI S KRASNYA CAPRI S CAPRI S STOCKHOLM STOCKHOLM SAC PEAK LOCKHEED MCMATH HUANCAYO LOCKHEED SAC PEAK HAWAII SAC PEAK LOCKHEED MCMATH CLIMAX MT WILSON	27	0756	0810 D	N09	E25	5720	14 D	1+	0758				
	27	0800 E	0821	N08	E24	5720	21 D	1	0801	2.50	2.70	5.80	
	27	0758 E		S10	E30	5719	2	1					
	27	1119 E	1140	N20	W24	5713	21 D	1	1120	2.40	2.60		
	27	1140 E	1225 D	N13	W82	5706	45 D	2	1152	1.50	9.00		
	27	1158 E	1238 D	N12	W75	5706	40 D	1+	1213	1.80	5.40		
	27	1238 E	1314 D	N07	E90	5726	36 D	1+	1247	1.80			
	27	1758	1858	N20	W27	5713	60	2	1824	5.82	2.00		20
	27	1812	1856	N19	W27	5713	44	1	1830	2.00	1.70		20
	27	1812	1915	N19	W28	5713	63	2	1844	1.50		2.60	

# SOLAR FLARES

JUNE 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MC-MATH PLACE REGION				TIME — UT	MCAS AREA Sq. Deg.	COBL AREA Sq. Deg.	MAX. WIDTH Ha		MAX. INT. %
{ HAWAII LOCKHEED SAC PEAK	JUNE 27 1960	2240	2244 D	N33 E52	5724	4 D	1	2	2244	1.60			20	
	27	2241	2310	N26 E54	5724	29	1	2	2250	2.90			18	
	27	2244	2250	N26 E53	5724	6	1	3		2.70				
{ CAPRI S ONDRÉJOV STOCKHOLM	28	1215 E	1228	N21 W36	5713	13 D	1	3	1217	1.70	2.30	3.30		
	28	1215	1235	N21 W37	5713	20	1+	3	1216					
	28	1216 E	1229	N19 W38	5713	13 D	1	3	1218	2.50	3.50		20	
{ LOCKHEED LOCKHEED LOCKHEED	28	1815	1942	N10 E69	5726	87	1	2	1907	3.10			20	
	28	1815	1942	N10 E69	5726	87	1	2	1907	3.10			20	
	28	1822	1838	N08 E68	5726	16	1	2	1825	1.50	3.50	3.00		Slow S-SWF
{ HUANCAYO MC-MATH HUANCAYO	28	1849 E	1914 D	N07 E69	5726	25 D	1	1	1853	4.00	5.80	2.80		
	28	1900 E	1925	N08 E68	5726	25 D	1+	2	1900	2.40				
	28	1922 E	1952 D	N19 E63	5726	30 D	2+	2	1923	5.20				
{ LOCKHEED LOCKHEED CAPRI S	29	0100	0140	N12 E02	5720	40	1	2	0106	2.50			10	
	29	0125	0220 D	N23 W56	5713	55	1	2	0144	3.00			20	S-SWF
	29	0719 E	0752	N28 E41	5724	33 D	1	2	0722	3.00	4.50			
{ CAPRI S SAC PEAK HUANCAYO	29	1045 F	1059	N28 E38	5724	14 D	1	1	1048	1.50	2.40		15	
	29	1312	1322	N08 E60	5726	10	1	3		2.91				
	29	1451	1520	S15 E72	5729	29	1	2	1501	1.50	4.70	2.80		
{ HUANCAYO SAC PEAK SAC PEAK	29	1620 E	1642	N17 W48	5713	22 D	1	2	1625	2.70	4.10	3.40	16	
	29	1810	1902	N26 E34	5724	52	1	3		3.64				
	29	1810	1920	N25 E32	5724	70	1	1	1824		2.00			
{ MC-MATH SAC PEAK SAC PEAK	29	2150	2210	N28 E26	5724	20	1	1		3.32			14	G-SWF
	30	0220	0227 D	N21 W55	5713	7 D	1	3	0225	2.50			20	
	30	1029 E	1158 D	N19 W54	5713	89 D	1	3	1046	2.20	4.80			
{ CAPRI S HAWAII HUANCAYO	30	1114 E	1120 D	N10 E41	5724	6 D	1	2	1116	2.50	3.20			
	30	1920	2000	N31 E27	5724	40 D	1	3	1922	1.20	2.60	3.30		S-SWF
	30	2136	2151	N19 W65	5713	15	1	2	2137	1.20			18	
{ SAC PEAK	30	2222	2232	N23 W70	5713	10	1	2	2137	2.49				

COMMENCE - STANDARDS - BOLDER

CAPRI C ANACAPRI - GERMAN  
CAPRI S ANACAPRI - SWEDISH  
GOOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
KIEV\* KIEV UNIVERSITY  
KODAIKANAL KODAIKANAL  
KRASTNYA KRASTNYA PAKIRA  
LOCKHEED LOS ANGELES

MOSCOW-C MOSCOW - GATSH  
R O EDIN ROYAL OBSERVATORY, EDINBURGH  
R O HERST GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX  
SAC PEAK SACRAMENTO PEAK  
SCHAUNS SCHAUNSLAND  
USNRL UNITED STATES NAVAL RESEARCH LABORATORY

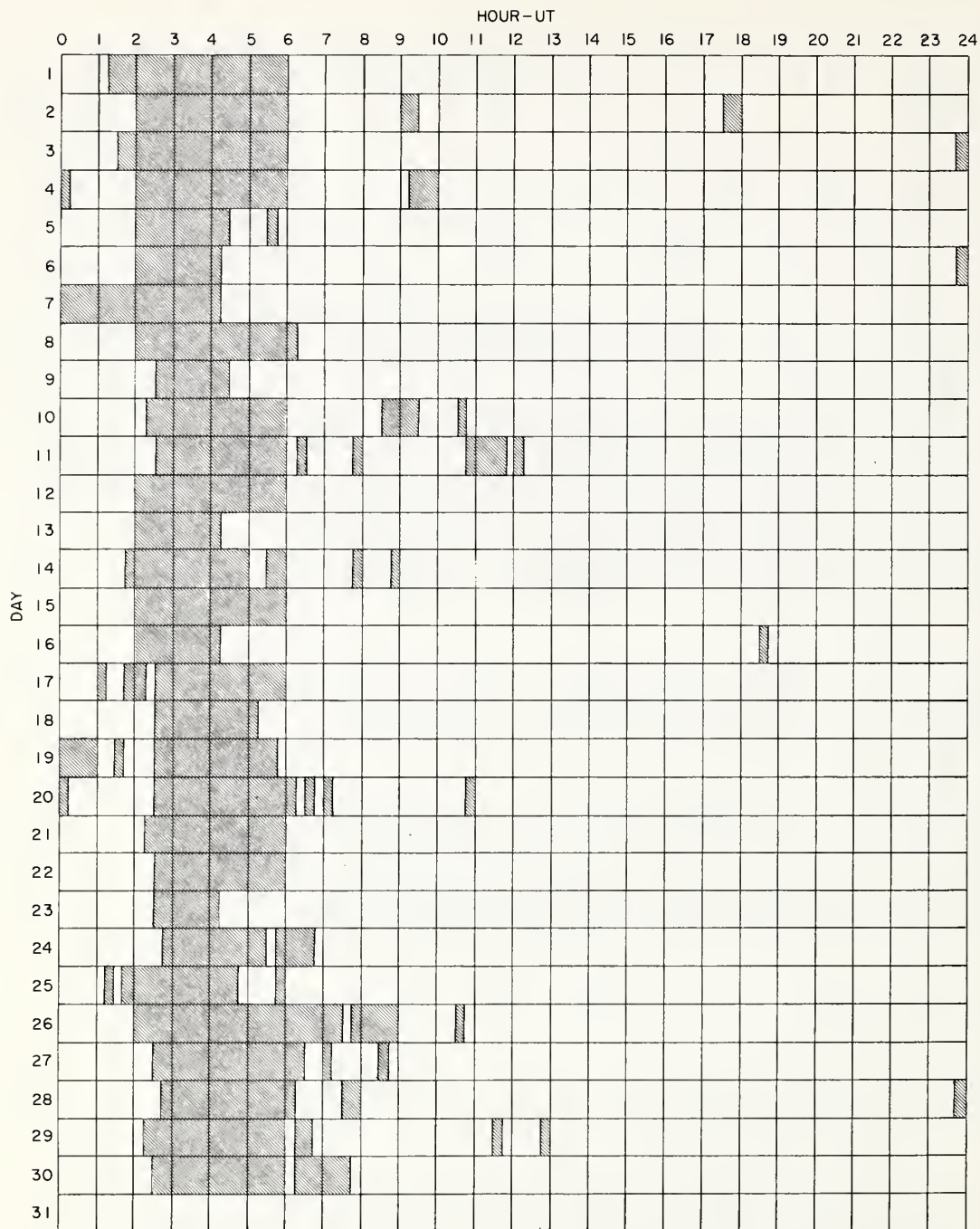
SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE  
ARBITRARY UNITS (0-40), NOT PERCENT  
OF CONTINUOUS SPECTRUM.

E - LESS THAN & - PLUS  
D - GREATER THAN - - MINUS  
U - APPROXIMATE □ - NOT REPORTED

LOCKHEED OBSERVATIONS: ALL VALUES IN THE MAXI-  
MUM INTENSITY COLUMN ARE ARBITRARY UNITS ON A  
SCALE OF 10 TO 40-NOT PERCENT OF THE CONTINUOUS  
SPECTRUM.

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

JUNE 1960



Stations Include:

COMMERCE - STANDARDS - BOULDER

Anacapri (Swedish)  
Arcetri  
Hawaii  
Huancayo

Lockheed  
McMath  
Ondrejov

Royal Greenwich Observatory  
Herstmonceux  
Sacramento Peak



Noted as follows: Date-Universal Time - Coordinates

MAY 1960

MCMATH	01 1203	N11 W58	LOCKHEED	07 1606	S12 E22	SAC PEAK	10 2220	N28 W50
MCMATH	01 1210	S08 E90	LOCKHEED	07 1647	N31 E12	SAC PEAK	10 2224	N12 W58
MCMATH	01 1314	N13 W46	LOCKHEED	07 1738	N12 W19	SAC PEAK	10 2228	N09 E02
CAPRI S	01 1315 E	N13 E40	LOCKHEED	07 1750	N32 E11	SAC PEAK	10 2246	N29 W39
SAC PEAK	01 1414	S08 E90	MCMATH	07 1755 E	N30 E10	LOCKHEED	10 2247	N28 W38
* LOCKHEED	01 1554	N14 W46	HAWAII	07 1800 E	N34 E05	LOCKHEED	10 2332	N10 E04
* SAC PEAK	01 1600 E	N14 W46	LOCKHEED	07 1800	S11 E21	LOCKHEED	11 0124	N11 W59
LOCKHEED	01 1610	N12 W58	SAC PEAK	07 1846	S13 E21	WENDEL	11 0548 E	N30 W40
SAC PEAK	01 1610	N10 W59	LOCKHEED	07 1847	S11 E21	WENDEL	11 0619 E	S12 E37
LOCKHEED	01 1631	S09 E69	SAC PEAK	07 1900	N09 W16	ONOREJOV	11 0715 E	N19 W66
SAC PEAK	01 1634	S07 E67	LOCKHEED	07 1900	N11 W17	WENDEL	11 0716 E	N30 W57
LOCKHEED	01 1725	N28 E90	HAWAII	07 1924 E	N08 W18	WENDEL	11 0745 E	N31 W41
* HAWAII	01 1814	N08 W62	HAWAII	07 1946	N09 W21	WENDEL	11 0807 E	S09 W57
* SAC PEAK	01 1816	N11 W57	LOCKHEED	07 2017	N12 W21	ONOREJOV	11 0814 E	N32 W42
LOCKHEED	01 1820	N08 W53	HAWAII	07 2022 E	N10 W24	WENDEL	11 0828 E	N31 W41
HAWAII	01 1838	N08 W53	LOCKHEED	07 2155	N28 E08	WENDEL	11 0851 E	N31 W41
SAC PEAK	01 1844	N13 W49	SAC PEAK	07 2200	N27 E07	WENDEL	11 0909 E	N31 W41
LOCKHEED	01 1928	N12 E62	* SAC PEAK	07 2242	S12 E18	* WENDEL	11 0940 E	N31 W42
LOCKHEED	01 2030	N15 W51	* LOCKHEED	07 2248	S11 E18	ARCETRI	11 1014 E	N30 W41
LOCKHEED	01 2030	N10 W52	LOCKHEED	08 0010	N30 E00	WENDEL	11 1320 E	S14 W41
SAC PEAK	01 2050 U	N15 W51	LOCKHEED	08 0034	N33 E01	SAC PEAK	11 1320	S15 W31
LOCKHEED	01 2149	N20 W58	CAPRI S	08 0815	N28 W00	* SAC PEAK	11 1334	N32 W40
LOCKHEED	01 2209	S08 E64	CAPRI S	08 0817	S10 E53	SAC PEAK	11 1428	S13 E24
HAWAII	01 2210	S07 E65	ARCETRI	08 0826 E	S01 E53	SAC PEAK	11 1436	S14 W43
SAC PEAK	01 2212 E	S10 E66	CAPRI S	08 1002 E	N10 W24	SAC PEAK	11 1504	N12 W74
HAWAII	01 2242	N13 W49	WENDEL	08 1112 E	S09 W23	SAC PEAK	11 1504	S16 W41
LOCKHEED	01 2243	N13 W50	WENDEL	08 1259 E	N29 E01	LOCKHEED	11 1506	N09 W04
LOCKHEED	02 0135	N13 E58	SAC PEAK	08 1308	N33 W08	LOCKHEED	11 1551	N17 W90
MCMATH	02 1308 E	S15 E90	LOCKHEED	08 1350 E	N10 W28	LOCKHEED	11 1555	N26 W53
SAC PEAK	02 1328	S15 E88	SAC PEAK	08 1350 E	N10 W31	LOCKHEED	11 1555	N26 W53
SAC PEAK	02 1426	S09 W47	WENDEL	08 1359 E	S11 W25	LOCKHEED	11 1603	N13 W71
* SAC PEAK	02 1426	S15 E89	LOCKHEED	08 1438	N33 W06	SAC PEAK	11 1606	N28 W51
MCMATH	02 1650	S06 E60	SAC PEAK	08 1452	S11 W20	SAC PEAK	11 1627	N10 W50
* HAWAII	02 1926 E	N14 W76	LOCKHEED	08 1500	S10 W20	LOCKHEED	11 1648	N27 W38
HAWAII	02 1934	N17 E52	LOCKHEED	08 1509	S13 E25	SAC PEAK	11 1702	N30 W52
* SAC PEAK	02 2134	N12 E30	LOCKHEED	08 1642	N19 E72	LOCKHEED	11 1702	N31 W71
SAC PEAK	02 2259	S14 E56	SAC PEAK	08 1642	N20 E70	LOCKHEED	11 1723	N29 W39
SAC PEAK	02 2300	S15 E83	SAC PEAK	08 1644	N33 W04	SAC PEAK	11 1726 U	N28 W40
HAWAII	02 2300	S10 E47	LOCKHEED	08 1945	N32 W03	LOCKHEED	11 1735	N09 W08
HAWAII	02 2354	N33 E68	SAC PEAK	08 1702	N30 W10	LOCKHEED	11 1735	N09 W08
WENDEL	03 0730 E	S09 E50	LOCKHEED	08 1730	N11 W29	LOCKHEED	11 1821	N31 W41
SAC PEAK	03 1314	S03 W43	SAC PEAK	08 1736	N32 W09	LOCKHEED	11 1821	N31 W41
SAC PEAK	03 1328	N14 E22	LOCKHEED	08 1737	N33 W09	LOCKHEED	11 1914 E	S19 W47
SAC PEAK	03 1336	S16 E70	LOCKHEED	08 1801	N17 W47	HAWAII	11 1914 E	S19 W47
ONOREJOV	03 1473 E	N20 W52	SAC PEAK	08 1820	N30 W03	LOCKHEED	11 1933	N17 W90
* SAC PEAK	03 1538 E	S05 W45	LOCKHEED	08 1833	N08 W32	* SAC PEAK	11 2110	N12 W66
SAC PEAK	03 1544	S15 E70	LOCKHEED	08 1902	N33 W09	LOCKHEED	11 2242	N31 W49
SAC PEAK	03 1602	S15 E70	SAC PEAK	08 1902	N31 W09	LOCKHEED	12 0152	S17 W16
MCMATH	03 1607	S13 E46	LOCKHEED	08 1909	N11 W29	LOCKHEED	12 0157	N13 W75
SAC PEAK	03 1608	S14 E45	SAC PEAK	08 1910	N10 W30	ONOREJOV	12 0545 E	N13 W76
SAC PEAK	03 1622	S12 E48	HAWAII	08 1914	N07 W33	CAPRI S	12 0651 E	N29 W50
ONOREJOV	03 1624 E	S13 E45	LOCKHEED	08 2103	N11 W30	CAPRI S	12 0831	N12 W66
SAC PEAK	03 1710	N09 E50	LOCKHEED	08 2131	S10 W28	WENDEL	12 0844 E	S16 W50
SAC PEAK	03 1818 E	S15 E45	SAC PEAK	08 2132	N11 W29	WENDEL	12 1021 E	N30 W58
SAC PEAK	03 1830	S05 W46	LOCKHEED	08 2150	N30 W12	SAC PEAK	12 1252	N10 W50
HAWAII	03 1831	S09 W47	LOCKHEED	08 2348	N31 W06	SAC PEAK	12 1252	N30 W57
MCMATH	03 2045	N30 E56	LOCKHEED	09 0024	N32 W06	ARCETRI	12 1310 E	N13 W85
SAC PEAK	03 2046	N30 E56	LOCKHEED	09 0024	N32 W06	* SAC PEAK	12 1340	N29 W58
MCMATH	03 2138	S04 W49	HAWAII	09 0038	E06	* R O HAWAII	12 1394 E	N29 W58
WENDEL	04 0513 E	S08 E39	LOCKHEED	09 0112	N32 W14	* SAC PEAK	12 1458	N30 W60
MCMATH	04 1155	S04 W56	LOCKHEED	09 0112	N32 W14	LOCKHEED	12 1525 E	N32 W67
MCMATH	04 1320	N15 E09	LOCKHEED	09 0210	N12 W35	LOCKHEED	12 1559	N14 W90
MCMATH	04 1333	S09 E49	WENDEL	09 0220 E	N32 W14	LOCKHEED	12 1604	N12 W60
MCMATH	04 1426	N12 E34	WENDEL	09 0613 E	S08 E52	LOCKHEED	12 1618	N32 W67
MCMATH	04 1603	N30 E48	CAPRI S	09 1215 E	N29 W19	LOCKHEED	12 1630	S07 E14
MCMATH	04 1610	S05 E36	SAC PEAK	09 1235 E	N32 W22	SAC PEAK	12 1634	S07 E14
* WENDEL	05 0607 E	N13 W01	SAC PEAK	09 1308	N11 W36	LOCKHEED	12 1637	N19 W90
* WENDEL	05 0613 E	N13 E01	WENDEL	09 1309 E	S11 W34	SAC PEAK	12 1640	N12 W90
WENDEL	05 0725 E	N13 E16	SAC PEAK	09 1314	S07 E57	LOCKHEED	12 1748	S07 E13
LOCKHEED	05 1640	N11 E09	SAC PEAK	09 1318	N31 W20	LOCKHEED	12 1750	N12 W62
MCMATH	05 1642	N11 E11	WENDEL	09 1327 E	S07 E56	HAWAII	12 1802	N25 W65
LOCKHEED	05 1750	S14 E17	WENDEL	09 1454 E	S07 E58	LOCKHEED	12 1857	N11 W90
HAWAII	05 1750	S13 E17	LOCKHEED	09 1704	S12 W39	SAC PEAK	12 1902	N11 W90
HAWAII	05 1752	N12 E02	WENDEL	09 1707 E	N11 W37	* LOCKHEED	12 1926 E	N22 W62
LOCKHEED	05 1754	N12 E06	LOCKHEED	09 1720	N10 W24	HAWAII	12 1926 E	N22 W62
LOCKHEED	05 1808	N12 E06	SAC PEAK	09 1802	S07 E44	SAC PEAK	12 1934	S16 W58
LOCKHEED	05 1850	N12 E06	SAC PEAK	09 1854	S07 E53	LOCKHEED	12 1935	S16 W58
MCMATH	05 1908	S07 E17	* LOCKHEED	09 1920	N29 W28	LOCKHEED	12 2026	N10 W90
LOCKHEED	05 1916	N11 E05	* SAC PEAK	09 1924	N28 W24	LOCKHEED	12 2056	N29 W63
LOCKHEED	05 2002	N12 E05	LOCKHEED	09 1928	S07 E53	LOCKHEED	12 2229	S11 E90
MCMATH	05 2003	N11 E04	HUANCAYO	09 1930 E	S12 W51	SAC PEAK	12 2230	N12 W60
HAWAII	05 2006 E	N12 E02	SAC PEAK	09 2000	S12 W40	SAC PEAK	12 2240	N27 W59
LOCKHEED	05 2045	N27 E35	LOCKHEED	09 2001	S12 W40	LOCKHEED	12 2244	N28 W60
LOCKHEED	05 2047	S03 W75	* LOCKHEED	09 2017	N29 W25	LOCKHEED	12 2244	N28 W60
HAWAII	05 2050	S09 W75	LOCKHEED	09 2040	N29 W25	SAC PEAK	12 2248	N30 W64
HAWAII	05 2130	N12 E07	SAC PEAK	09 2054	N28 W25	LOCKHEED	12 2320	N29 W63
LOCKHEED	05 2204	S14 E13	SAC PEAK	09 2100 D	S13 E47	* CAPRI S	13 0740 E	S10 E90
LOCKHEED	05 2204	N12 E05	LOCKHEED	09 2114	N11 W07	WENDEL	13 0812 E	S11 E84
LOCKHEED	05 2300 D	S04 W79	LOCKHEED	09 2118	N31 W26	WENDEL	13 1030 E	N15 E20
LOCKHEED	05 2346	N11 E04	LOCKHEED	09 2152	N38 W03	* CAPRI S	13 1037	N16 E22
LOCKHEED	05 2346	N11 E04	LOCKHEED	09 2152	N38 W03	CAPRI S	13 1250	N30 W73
LOCKHEED	05 2346	N11 E04	LOCKHEED	09 2152	N38 W03	CAPRI S	13 1324 E	S11 E85
HAWAII	06 0050 E	N10 W01	LOCKHEED	09 2240	N11 E17	SAC PEAK	13 1326	S11 E90
LOCKHEED	06 0159	N12 E03	LOCKHEED	09 2306	S11 W06	SAC PEAK	13 1352	S11 E90
LOCKHEED	06 0216	N12 E03	SAC PEAK	09 2306	S11 W07	LOCKHEED	13 1500	N30 W75
ONOREJOV	06 0540	N12 E02	* SAC PEAK	09 2312	N33 W26	LOCKHEED	13 1505	S11 E82
ONOREJOV	06 0955 E	S07 E09	* HAWAII	09 2316	N30 W27	LOCKHEED	13 1505	S11 E82
SAC PEAK	06 1398	S10 E90	* SAC PEAK	09 2326	N28 W26	LOCKHEED	13 1505	S11 E82
LOCKHEED	06 1735	S13 E90	* LOCKHEED	09 2342	N11 E17	* LOCKHEED	13 1505	S11 E82
* HUANCAYO	06 1913 E	S05 E05	LOCKHEED	09 2346	S06 E51	SAC PEAK	13 1528	S14 E81
LOCKHEED	06 1915	N32 E16	HAWAII	09 2350 E	S04 E51	LOCKHEED	13 1534	N30 W75
LOCKHEED	06 1921	S13 E34	LOCKHEED	10 0033	N31 W26	LOCKHEED	13 1534	N15 E18
* LOCKHEED	06 1948	S07 E04	LOCKHEED	10 0040	S13 W44	LOCKHEED	13 1619	N11 W49
LOCKHEED	06 2011	S08 W03	SAC PEAK	10 1354	N33 W28	LOCKHEED	13 1621	N29 W75
SAC PEAK	06 2012	S07 E03	* SAC PEAK	10 1448	N09 E09	LOCKHEED	13 1642	N29 W75
LOCKHEED	06 2022	S16 E90	CAPRI S	10 1453	N10 E07	LOCKHEED	13 1643	S12 W90
SAC PEAK	06 2027	N09 W05	WENDEL	10 1517 E	N29 W33	LOCKHEED	13 1650	N31 W70
SAC PEAK	06 2028	N10 W04	* LOCKHEED	10 1530 E	N09 E09	LOCKHEED	13 1705	S11 W07
LOCKHEED	06 2115	S06 E02	WENDEL	10 1548 E	N28 W46	LOCKHEED	13 1710	N28 W74
LOCKHEED	06 2138	N15 W22	* SAC PEAK	10 1550	N31 W35	LOCKHEED	13 1732	N30 W79
HAWAII	06 2142	N11 W22	* LOCKHEED	10 1550	N30 W35	LOCKHEED	13 1732	N30 W79
SAC PEAK	06 2142	N13 W21	WENDEL	10 1624 E	N29 W35	LOCKHEED	13 1810	S12 E80
LOCKHEED	07 0010	N28 E19	SAC PEAK	10 1632	N30 W39	LOCKHEED	13 1810	N29 W79
LOCKHEED	07 0020	N09 W08	ONOREJOV	10 1640 E	S10 E35	LOCKHEED	13 1810	N29 W79
LOCKHEED	07 0024	N28 E19	* LOCKHEED	10 1815	N24 W33	LOCKHEED	13 1824	N15 E16
LOCKHEED	07 0100	S07 E01	LOCKHEED	10 1839	N24 W33	LOCKHEED	13 1849	N29 W79
CAPRI S	07 0747	N12 W08	SAC PEAK	10 1840	N28 W41	SAC PEAK	13 1852	N28 W80
WENDEL	07 0808 E	N12 W13	LOCKHEED	10 1842	N32 W36	LOCKHEED	13 1948	N29 W79
WENDEL	07 0814 E	N12 W13	MCMATH	10 1936 E	N29 W48	LOCKHEED	13 2019	N29 W79
ONOREJOV	07 1231	N30 E07	LOCKHEED	10 1938	N12 W69	LOCKHEED	13 2101	N29 W79
SAC PEAK	07 1329 E	S08 W12	LOCKHEED	10 2004	N11 W57	* LOCKHEED	13 2133	N29 W79
LOCKHEED	07 1508	N30 E08	LOCKHEED	10 2027	S13 E33	* SAC PEAK	13 2138	N28 W80
SAC PEAK	07 1532	S08 E77	LOCKHEED	10 2059	N09 E05	* SAC PEAK	13 2140	N29 W86
LOCKHEED	07 1532	S08 E77	LOCKHEED	10 2141	N29 E38	SAC PEAK	13 2150	N14 E15
LOCKHEED	07 1532	S08 E77	* SAC PEAK	10 2142	N28 W41	LOCKHEED	13 2153	N14 E15

## SUBFLARES

Noted as follows: Date-Universal Time- Coordinates

MAY 1960

LOCKHEED	13	2209	N29 W90	LOCKHEED	18	1852	N15 W26	LOCKHEED	23	2152	N13 E21
SAC PEAK	13	2210	N29 W86	HAWAII	18	1852	N13 W27	HAWAII	23	2159	N13 E19
HAWAII	13	2214	E	LOCKHEED	18	1859	N18 W27	LOCKHEED	23	2340	N16 E18
LOCKHEED	13	2241	S10 W24	MCNATH	18	1551	S03 E42	LOCKHEED	24	0004	N13 E17
LOCKHEED	13	2310	N29 W90	LOCKHEED	18	2226	S12 E05	LOCKHEED	24	0051	N17 E14
LOCKHEED	13	2312	N29 W85	LOCKHEED	18	2255	N17 W25	LOCKHEED	24	0114	N10 E19
LOCKHEED	13	2325	E N30 W06	SAC PEAK	18	2259	N17 W25	LOCKHEED	24	0139	N16 E16
LOCKHEED	13	2332	N29 W79	HAWAII	18	2356	E N13 W30	* CAPRI 5	24	0650	E N17 E12
LOCKHEED	13	2353	N14 E12					WENDEL	24	0742	E N02 E49
LOCKHEED	13	2359	N29 W79	SAC PEAK	19	1450	S12 W02	ONOREJOV	24	0928	E N11 E13
LOCKHEED	14	0027	N29 W90	LOCKHEED	19	1500	S13 E14	ONOREJOV	24	0937	N16 E09
LOCKHEED	14	0109	N29 W90	MCNATH	19	1505	S14 E14	ONOREJOV	24	1028	E S12 W52
LOCKHEED	14	0135	N29 W90	SAC PEAK	19	1512	D S12 W03	* MCNATH	24	1125	E N02 E47
SAC PEAK	14	1306	N27 W90	LOCKHEED	19	1612	S14 W05	MCNATH	24	1157	N12 E10
SAC PEAK	14	1328	N18 E90	HUANCAYO	19	1613	E S14 W02	LOCKHEED	24	1217	N03 E47
* SAC PEAK	14	1432	S11 E86	MCNATH	19	1613	S14 W02	MCNATH	24	1332	N12 E09
LOCKHEED	14	1736	S11 W41	LOCKHEED	19	1740	S13 E14	SAC PEAK	24	1332	N14 E10
MCNATH	14	1737	S10 W34	HAWAII	19	1754	E S08 E03	* SAC PEAK	24	1354	N10 E11
* LOCKHEED	14	1820	U S09 E64	LOCKHEED	19	1757	N14 E78	* CAPRI 5	24	1356	E N10 E14
* MCNATH	14	1830	E S11 E63	LOCKHEED	19	1821	N17 W25	* HUANCAYO	24	1414	E N10 E10
MCNATH	14	1905	E S11 E63	LOCKHEED	19	1907	N16 E76	LOCKHEED	24	1502	N14 E07
SAC PEAK	14	1912	S10 E64	LOCKHEED	19	1907	N16 E76	LOCKHEED	24	1634	S11 W70
HAWAII	14	2356	N18 E27	LOCKHEED	19	1912	S13 W05	LOCKHEED	24	1643	N15 E05
				SAC PEAK	19	1914	S12 W06	MCNATH	24	1801	N14 E06
WENDEL	15	0631	E N15 E28	HAWAII	19	1914	S13 W15	SAC PEAK	24	1822	N14 E06
WENDEL	15	0756	E N27 E46	HAWAII	19	1948	N16 E76	MCNATH	24	1823	E N14 E06
WENDEL	15	0842	E S08 E56	LOCKHEED	19	1948	N16 E76	LOCKHEED	24	1906	N15 W06
WENDEL	15	1241	E N18 E70	LOCKHEED	19	1955	S13 E12	LOCKHEED	24	1934	U S09 W73
MCNATH	15	1242	N17 E20	LOCKHEED	19	1956	S14 W06	LOCKHEED	24	1941	N02 E40
* CAPRI 5	15	1248	E N15 E20	SAC PEAK	19	2002	S12 W06	MCNATH	24	2012	E N18 W29
* MCNATH	15	1302	N19 E17	HAWAII	19	2002	S14 W15	SAC PEAK	24	2024	N17 E06
WENDEL	15	1358	E S11 E54	HUANCAYO	19	2007	S13 W05	MCNATH	24	2026	S09 W75
MCNATH	15	1804	S12 E49	LOCKHEED	19	2052	S14 E13	MCNATH	24	2026	N16 E06
SAC PEAK	15	1804	S12 E49	LOCKHEED	19	2247	S13 W07	LOCKHEED	24	2058	N11 E08
SAC PEAK	15	1944	S12 E48	HAWAII	19	2248	E S13 W07	LOCKHEED	24	2152	N11 E08
MCNATH	15	1944	S12 E49	SAC PEAK	19	2250	S13 W07	LOCKHEED	24	2201	N18 E05
SAC PEAK	15	2100	N17 E16					LOCKHEED	24	2206	S09 W75
HAWAII	15	2110	N19 E12	LOCKHEED	20	0124	S12 W08	HAWAII	24	2314	N14 E02
SAC PEAK	15	2110	N16 E15	SAC PEAK	20	1414	S09 W13	LOCKHEED	25	0001	N11 E05
SAC PEAK	15	2132	N15 E16	LOCKHEED	20	1450	S08 W13	LOCKHEED	25	0039	N12 E07
HAWAII	15	2134	N20 E14	LOCKHEED	20	1821	S08 W13	LOCKHEED	25	0053	S10 W75
SAC PEAK	15	2308	S13 E47	MCNATH	20	1822	S09 W14	LOCKHEED	25	0115	S10 W75
				MCNATH	20	1900	S14 W03	LOCKHEED	25	0115	S10 W75
WENDEL	16	0927	E S09 E44	LOCKHEED	20	1900	S15 W04	* CAPRI 5	25	1144	N16 W01
MCNATH	16	1210	N16 E06	HAWAII	20	1904	S14 W02	MCNATH	25	1150	E N15 W01
MCNATH	16	1246	S13 E38	LOCKHEED	20	1950	S09 W16	* MCNATH	25	1247	N15 W01
* MCNATH	16	1306	N16 E06	LOCKHEED	20	1950	S15 W04	* CAPRI 5	25	1248	E N18 W00
SAC PEAK	16	1308	S09 E40	LOCKHEED	20	1950	S15 W04	* SAC PEAK	25	1250	D N17 W01
MCNATH	16	1308	S11 E41	HAWAII	20	1950	E S14 W01	MCNATH	25	1329	N15 W06
* SAC PEAK	16	1308	N15 E05	SAC PEAK	20	2020	N20 E03	SAC PEAK	25	1346	N19 W06
ONOREJOV	16	1312	E S10 E42	SAC PEAK	20	2042	S15 W03	HUANCAYO	25	1418	E N15 W06
MCNATH	16	1339	S13 E38	LOCKHEED	20	2101	S15 W04	* MCNATH	25	1430	E N14 W39
* SAC PEAK	16	1452	E S12 E34	LOCKHEED	20	2101	S15 W04	* ONOREJOV	25	1431	E N20 W38
MCNATH	16	1452	S12 E40	HAWAII	20	2106	E S15 W02	* CAPRI 5	25	1436	E N15 W40
* MCNATH	16	1454	N23 E33	LOCKHEED	20	2124	N14 E51	HUANCAYO	25	1440	E N01 W36
HUANCAYO	16	1501	S09 E42	HAWAII	20	2242	S15 W03	* SAC PEAK	25	1442	N18 W19
* WENDEL	16	1505	E S09 E42	LOCKHEED	20	2330	S09 W18	MCNATH	25	1530	N16 W05
WENDEL	16	1513	E N16 E09					* WENDEL	25	1534	E N19 W08
WENDEL	16	1521	E S08 E45	HAWAII	21	0126	S14 W08	* WENDEL	25	1538	E N17 W04
* MCNATH	16	1622	N16 E08	LOCKHEED	21	0126	S13 W09	* HUANCAYO	25	1541	N15 W01
* SAC PEAK	16	1625	E N14 E01	SAC PEAK	21	1658	N17 E50	SAC PEAK	25	1554	S13 W72
LOCKHEED	16	1833	U N16 W06	LOCKHEED	21	1658	N16 E48	MCNATH	25	1555	S12 W72
* MCNATH	16	1901	N15 E01	SAC PEAK	21	1746	N10 E39	WENDEL	25	1612	N12 W04
LOCKHEED	16	1931	N11 E36	MCNATH	21	1747	N09 E39	LOCKHEED	25	1700	N04 E30
LOCKHEED	16	2131	N19 E03	LOCKHEED	21	1747	N11 E38	LOCKHEED	25	1725	N13 E90
HUANCAYO	16	2143	S10 E36	LOCKHEED	21	1818	S16 W15	LOCKHEED	25	1725	N17 W08
LOCKHEED	16	2213	S10 E37	SAC PEAK	21	1820	S15 W01	* LOCKHEED	25	1729	N17 W08
LOCKHEED	16	2236	S10 E35	HAWAII	21	1822	S16 W15	* MCNATH	25	1750	E N15 W06
SAC PEAK	16	2236	S10 E37	LOCKHEED	21	1838	N03 E90	HUANCAYO	25	1918	E N12 E18
LOCKHEED	16	2252	S10 E35	LOCKHEED	21	1845	N16 W75	HUANCAYO	25	2117	N15 W27
LOCKHEED	16	2258	S10 E35	SAC PEAK	21	2000	N17 W75	LOCKHEED	25	2118	S11 W74
LOCKHEED	16	2325	N16 W01	MCNATH	21	2021	N17 W78	LOCKHEED	25	2152	N14 W09
SAC PEAK	16	2326	N16 W03	* MCNATH	21	2021	N11 E48	LOCKHEED	25	2220	N19 W44
LOCKHEED	16	2343	N16 E03	LOCKHEED	21	2022	N16 W75	MCNATH	25	2220	N18 W44
				HAWAII	21	2024	N10 W76	HAWAII	25	2222	N14 W45
LOCKHEED	17	0030	S10 E34	LOCKHEED	21	2106	S14 W16	LOCKHEED	26	0035	N12 E90
LOCKHEED	17	0051	S10 E34	SAC PEAK	21	2310	N09 E37	LOCKHEED	26	0035	N15 W13
WENDEL	17	0951	E S08 E32	LOCKHEED	21	2310	N11 E37	HAWAII	26	0112	E N17 W15
ARCETRI	17	0802	E N17 W16					LOCKHEED	26	0221	N14 W11
ONOREJOV	17	0803	N15 W10	LOCKHEED	22	0020	N17 E45	ONOREJOV	26	0221	N14 W11
WENDEL	17	0805	E S15 W40	LOCKHEED	22	1420	E N20 W90	ONOREJOV	26	0541	E N11 W11
WENDEL	17	1212	E N18 W06	LOCKHEED	22	1455	N15 E36	ONOREJOV	26	0703	E N19 W13
SAC PEAK	17	1338	S11 E33	LOCKHEED	22	1528	N03 E70	WENDEL	26	1148	E N15 W18
* SAC PEAK	17	1341	E S12 E34	SAC PEAK	22	1530	N02 E07	SAC PEAK	26	1148	E N15 W18
* SAC PEAK	17	1344	S15 E34	LOCKHEED	22	1532	N15 E36	SAC PEAK	26	1302	S09 W75
SAC PEAK	17	1400	S09 E26	LOCKHEED	22	1615	N01 E70	SAC PEAK	26	1340	N11 W12
* SAC PEAK	17	1414	N18 W09	SAC PEAK	22	1622	N02 E70	LOCKHEED	26	1500	U S10 W90
HUANCAYO	17	1416	S11 E39	LOCKHEED	22	1624	S11 W40	SAC PEAK	26	1506	N16 W14
WENDEL	17	1418	E S10 E32	LOCKHEED	22	1706	S08 W39	SAC PEAK	26	1514	N13 E90
WENDEL	17	1431	E S12 E30	LOCKHEED	22	1711	N03 E70	LOCKHEED	26	1515	N13 E90
SAC PEAK	17	1502	N15 W18	LOCKHEED	22	1711	N03 E70	LOCKHEED	26	1521	S13 W90
WENDEL	17	1504	E S14 W18	LOCKHEED	22	1712	N19 W90	* SAC PEAK	26	1522	S13 W90
SAC PEAK	17	1614	S15 E39	SAC PEAK	22	1742	N02 E71	LOCKHEED	26	1615	N18 W65
LOCKHEED	17	1615	S14 E37	LOCKHEED	22	1808	N03 E70	SAC PEAK	26	1626	N19 W55
HUANCAYO	17	1616	N18 W10	LOCKHEED	22	1808	N03 E70	HUANCAYO	26	1627	N18 W17
LOCKHEED	17	1720	E S18 E37	LOCKHEED	22	1818	N14 E36	LOCKHEED	26	1645	N18 W21
SAC PEAK	17	1722	S14 E36	LOCKHEED	22	1843	S13 W93	LOCKHEED	26	1702	N18 W65
SAC PEAK	17	1802	N15 W13	LOCKHEED	22	1902	N03 E70	SAC PEAK	26	1708	N19 W56
LOCKHEED	17	1805	N18 W13	LOCKHEED	22	1917	S12 W30	SAC PEAK	26	1740	N11 W16
HAWAII	17	1806	N16 W15	LOCKHEED	22	1948	N13 W94	LOCKHEED	26	1742	N12 W19
SAC PEAK	17	1810	S14 E86	LOCKHEED	22	2013	N15 E33	LOCKHEED	26	1800	N19 W57
LOCKHEED	17	1838	N17 W21	LOCKHEED	22	2013	N15 E33	LOCKHEED	26	1800	N19 W57
LOCKHEED	17	1856	S13 E38	SAC PEAK	22	2038	N16 E34	LOCKHEED	26	1800	N19 W57
LOCKHEED	17	1944	N16 W22	LOCKHEED	22	2100	N04 E70	LOCKHEED	26	1804	N14 W20
SAC PEAK	17	1946	N16 W20	SAC PEAK	22	2112	N02 E68	HAWAII	26	1806	N12 W19
HAWAII	17	1946	N15 W22	LOCKHEED	22	2148	N04 E70	* LOCKHEED	26	1821	N13 E80
LOCKHEED	17	1956	S08 E25	LOCKHEED	22	2148	N04 E70	* SAC PEAK	26	1822	N14 E90
SAC PEAK	17	1956	S08 E25	SAC PEAK	22	2150	N02 E68	* SAC PEAK	26	1832	N12 W16
HAWAII	17	2002	S07 E26	LOCKHEED	22	2345	N19 W06	* HAWAII	26	1834	E N10 W18
SAC PEAK	17	2004	N17 W13					LOCKHEED	26	1920	N19 W57
LOCKHEED	17	2004	N17 W13	LOCKHEED	23	0000	N03 E67	SAC PEAK	26	1926	N20 W22
LOCKHEED	17	2004	N17 W13	LOCKHEED	23	0115	N20 W90	HAWAII	26	1926	N18 W24
HAWAII	17	2006	N15 W15	LOCKHEED	23	0115	N03 E67	LOCKHEED	26	1950	N21 W24
HAWAII	17	2030	N15 W15	LOCKHEED	23	0115	N03 E6				

## SUBFLARES

IIIj

Noted as follows: Date-Universal Time - Coordinates

MAY 1960

LOCKHEED	27	1534	N05 E03
LOCKHEED	27	1610	N05 E05
DNDREJDV	27	1625 E	N04 E05
LOCKHEED	27	1630	N15 W34
LOCKHEED	27	1630	N15 W34
LOCKHEED	27	1640	N14 E70
DNDREJDV	27	1646	N10 E60
DNDREJDV	27	1706	N16 E39
LOCKHEED	27	1719	N19 W34
* SAC PEAK	27	1720	N19 W71
* LOCKHEED	27	1725	N18 W70
LOCKHEED	27	1737	N19 W37
LOCKHEED	27	1751	N13 W34
LOCKHEED	27	1803	N18 W70
HAWAII	27	1816 E	N20 E67
* LOCKHEED	27	1820	N16 W30
* SAC PEAK	27	1850	N15 W30
LOCKHEED	27	1917	N15 E70
HAWAII	27	1922	N19 E66
LOCKHEED	27	1929	N16 W35
LOCKHEED	27	1935	S21 E70
MCMAH	27	2011 E	N12 E67
LOCKHEED	27	2012	N17 E74
LOCKHEED	27	2012	N17 E74
HAWAII	27	2044	N19 E65
HUANCAYD	27	2045	N13 E70
LOCKHEED	27	2047	N03 E00
HAWAII	27	2050	N04 W01
LOCKHEED	27	2104	N09 W20
HAWAII	27	2106	N08 W22
LOCKHEED	27	2137	N04 W02
* LOCKHEED	27	2153	N15 E64
* HAWAII	27	2200	N18 E66
LOCKHEED	27	2211	N16 W31
LOCKHEED	27	2355	N15 E64
LOCKHEED	28	0030	N15 E64
HAWAII	28	0030	N15 E63
LOCKHEED	28	0041	N17 W43
LOCKHEED	28	0130	N17 W43
LOCKHEED	28	0217	N31 E90
CAPRI S	28	0328 E	N12 E58
WENDEL	28	0832 E	N13 E60
CAPRI S	28	1301	N12 E54
* WENDEL	28	1354 E	N13 E56
* HUANCAYD	28	1508 E	N13 E55
LOCKHEED	28	1529	N14 E56
MCMAH	28	1532	N12 E56
LOCKHEED	28	1552	N14 E56
LOCKHEED	28	1558	N33 E90
LOCKHEED	28	1715	N14 E56
LOCKHEED	28	1745	N05 W12
LOCKHEED	28	1807	N25 E87
LOCKHEED	28	1818	N16 W46
LOCKHEED	28	1850	N15 W48
LOCKHEED	28	1905	S07 E61
SAC PEAK	28	1906	S09 E61
HAWAII	28	1908	S03 E64
LOCKHEED	28	1917	N16 E53
HAWAII	28	1922 E	N18 E51
LOCKHEED	28	2010	N27 E90
LOCKHEED	28	2023	N16 E53
LOCKHEED	28	2115	S07 E61
MCMAH	28	2115	S09 E60
HAWAII	28	2116	S05 E63
* LOCKHEED	28	2130	N05 W14
* LOCKHEED	28	2130	N05 W14
* MCMAH	28	2150	N04 W14
* HAWAII	28	2152	N02 W14
LOCKHEED	28	2329	N15 W47
LOCKHEED	29	0010	N16 E51
LOCKHEED	29	0058	S12 E61
LOCKHEED	29	0102	S16 E37
HAWAII	29	0114 E	S13 E39
HAWAII	29	0122	N19 E47
LOCKHEED	29	0123	N14 E48
* SAC PEAK	29	1542	N12 E43
* SAC PEAK	29	1552	N13 E47
* MCMAH	29	1554 E	N12 E44
HUANCAYD	29	1700	N12 E41
SAC PEAK	29	1714	N11 E39
HAWAII	29	1810	N16 E39
* LOCKHEED	29	1840 E	N14 E40
LOCKHEED	29	2050	N15 W63
LOCKHEED	29	2140 U	N13 E41
HAWAII	29	2144	N17 E39
HAWAII	29	2220 E	N18 E36
SAC PEAK	29	2242	S18 E26
HAWAII	29	2244	S15 E26
WENDEL	30	1548 E	N15 E24
* WENDEL	30	1705 E	N16 E24
* SAC PEAK	30	1809 D	N13 E27
HAWAII	30	1906	N36 E65
LOCKHEED	30	2039	N16 W72
HAWAII	30	2042	N09 W70
LOCKHEED	30	2042	N31 E65
HAWAII	30	2044	N36 E65
LOCKHEED	30	2132	N26 E60
SAC PEAK	30	2200	N27 E64
* LOCKHEED	30	2201	N31 E65
LOCKHEED	30	2241	N16 W75
LOCKHEED	30	2312	N10 W74
* CAPRI S	31	0750 E	N12 E21
* MCMAH	31	1321 E	N17 W90
* MCMAH	31	1511 E	N12 E16
WENDEL	31	1635 E	N28 E46
HAWAII	31	1946	N14 E11
LOCKHEED	31	2005	N16 W90
MCMAH	31	2010	N18 W90
LOCKHEED	31	2034	N31 E50
LOCKHEED	31	2038	N14 E13
LOCKHEED	31	2200	S17 W02
SAC PEAK	31	2206	S17 W02
LOCKHEED	31	2212	N32 E50
HAWAII	31	2212	S16 W02
LOCKHEED	31	2245	N17 W90
LOCKHEED	31	2314	N13 E08
LOCKHEED	31	2322	S15 W04
SAC PEAK	31	2324	S17 W02

\*Rated as flare of importance  $\geq 1$  by other observatories (see CRPL-F-190 Part B) page IIIi.

# SOLAR FLARES

NOV - DEC 1959

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX.		TIME — U T				MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>		
				LAT.	MER. DIST.									
													MCNATH PLAGE REGION	
KYOTO	14	0146	0153	S08 W23	5454	7	1		0148	3.32		1.32	80	S-SWF S-SWF
KYOTO	14	0154 E	0203 D	S20 W46	5452	9 D	1+		0154	5.82		1.32	120	
KYOTO	14	0205	0223 D	S18 W34	5452	18 D	1		0212	2.49		2.00	130	
KYOTO	14	0453	0521 D	S17 W37	5452	28 D	1		0453	3.32		1.66	100	
KYOTO	15	0620 E	0636 D	S16 W35	5454	16 D	1		0620	2.08		1.83	100	
KYOTO	15	0641 E	0704 D	S19 W50	5452	23 D	1+		0641	4.78		2.00	120	
KYOTO	29	0056 E	0108 D	N10 E29	5476	12 D	1		0101	2.91		1.58	100	
KYOTO	29	0201	0212 D	N20 E05	5471	11 D	1		0201	2.08		1.73	100	
KYOTO	29	0536 E	0545	N09 E29	5476	9 D	1		0536	3.74		1.66	120	
KYOTO	29	0613	0622	N20 E05	5471	9	1		0613	2.28		1.49	100	
KYOTO	30	0000 E	0008	N08 E21	5476	8 D	1			1.45		1.74	100	
KYOTO	30	0128	0134	N08 E16	5476	6	1		0130	1.66		2.17	120	
KYOTO	30	0504	0525	N08 E16	5476	21	1		0504	3.32		1.66	100	
KYOTO	30	2342	0204	N06 E05	5476	142	1		2350	3.32		2.00	100	
	DEC 1959													
KYOTO	01	0040 E	0114 D	N07 E02	5476	34 D	1		0040	2.91			100	
KYOTO	02	0141	0147 D	N11 E49	5478	6 D	1		0141	1.66		1.83	120	
KYOTO	02	0432	0440 D	N07 W12	5476	8 D	1		0432	1.45		3.37	120	S-SWF
KYOTO	02	0500 E	0656	N08 W10	5476	116 D	2		0528	8.72		1.83	130	Slow S-SWF
KYOTO	10	2355	0032 D	N18 W90	5478	37 D	2		2355	7.27		4.07	130	Slow S-SWF
KYOTO	12	0058 E	0126	N18 E42	5491	28 D	1		0058	2.49		1.66	100	
KYOTO	25	0225	0235 D	N24 W22	5502	10 D	1		0225	1.66			90	

E - LESS THAN  
D - GREATER THAN  
U - APPROXIMATE

& - PLUS  
- - MINUS  
□ - NOT REPORTED

COMMERCE - STANDARDS - BOULDER

FOOTNOTES FOR KYOTO FLARES  
NOV-DEC. 1959

Note: The dates and hours of flare patrol at Kyoto were as follows:

1959 Nov.	4	0540-0645; 0655-0700
	5	0500-0554; 0630-0655
	6	0012-0107
	7	0525-0558
	7-8	2337-2346; 2351-0002; 0126-0131; 0140-0225
	10	0555-0640
	10-11	2345-0055; 0110-0121; 0520-0530
	11-12	2345-0028; 0125-0210
	14	0115-0335; 0407-0635
	15	0603-0710
	19-20	2340-0210; 0340-0615
	21-22	2330-0010; 0205-0240; 0440-0520
	23	0000-0225; 0345-0606; 0645-0730
	24	0023-0215; 0420-0447
	28-29	2340-0010; 0055-0154; 0201-0214; 0430-0625
	30	0000-0050; 0120-0220; 0430-0630
	30	2340-0215
1959 Dec.	1	0415-0635
	2	0012-0240; 0420-0607; 0617-0638; 0643-0700
	7	0115-0223
	8-9	2350-0230
	10-11	2355-0045
	12	0010-0230; 0432-0534
	12-13	2347-0240; 0410-0450
	21-22	2345-0110; 0140-0156
	25	0210-0240; 0420-0515
	26	0200-0220; 0340-0509
	27	0005-0200; 0410-0530; 0545-0645
	28	0215-0235; 0427-0432
	29	0112-0120; 0129-0137; 0415-0447
	30	0058-0125; 0205-0225; 0400-0500

With this information the charts giving intervals of no flare patrol observations in CRPL-F 189 Part B and CRPL-F 190 Part B can be revised.



# SOLAR FLARES

JANUARY 1960

III

OBSERVATORY	DATE	OBSERVED		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			MAX. WIDTH H <sub>α</sub>	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER. DIST.	MCARTH PLACE REGION				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
VOROSHILOV	01	0353	0405 D	S15	W78	S508	12 D	1+	2		.73			86	
PIRCULI	03	1003	1015	S10	W50	S510	12	1			2.17			60	
ABASTUMANI	04	0828	0838	S20	E82	S525	10	1	2	0830	.88	4.47		62	
ABASTUMANI	04	0846	0856	S19	E79	S525	10	1	2	0849	1.00	4.14		68	
VOROSHILOV	07	0107	0120	N07	W67	S512	13	1+	2		1.54			101	
VOROSHILOV	07	0131	0146	N07	W68	S512	15	1+	2		1.00			87	
VOROSHILOV	07	2358	0012	N07	W80	S512	14	1	2		1.27			76	
VOROSHILOV	07	2359	0005	S13	W85	S510	6	1	2		.63			68	
VOROSHILOV	08	0033	0038	N06	W82	S512	5	1+	2		.63			102	
PIRCULI	09	0636 E	0645	S18	E17	S525	9 D	1			2.48			53	
PIRCULI	09	0813	0818	S14	E07	S525	5	1			.95			53	
VOROSHILOV	14	0303	0353	N18	W28	S527	50	1+	2		2.25			89	
SIMEIZ	14	0811 E	0830 D	S14	W68	S525	19 D	1	2	0814	.90	2.30		65	
SIMEIZ	14	0819 E	0837 D	N19	W31	S527	18 D	1	2	0819	1.63	1.90		70	
VOROSHILOV	17	0027 E	0042 D	N09	E64	S540	15 D	1+	1		.90			83	
PIRCULI	18	0804	0816 D	N08	E38	S540	12 D	1			2.17			62	
PIRCULI	18	0935 E	0950	N08	E37	S540	15 D	1			2.17			65	
VOROSHILOV	18	2347 E	0149	N14	E54	S541	122 D	1	2	0013	2.71			64	
PIRCULI	19	0818	0838	N16	E48	S545	20	1			2.81			54	
PIRCULI	23	0646 E	0955 D	N08	W59	S538	189 D	1+	1		4.12			80	
SIMEIZ	23	0651 E	0705 D	N09	E88	S550	14 D	1+		0651	1.01	7.20			
KYOTO	26	0139 E	0152 C	N07	E47	S550	13 D	1		0139	2.08		1.49	80	
VOROSHILOV	27	0037	0043	N13	E48	S550	6	1	3		1.71			68	
SIMEIZ	27	0721 E	0810 D	N10	E77	S552	49 D	1	2	0723	.90	3.00		78	
SIMEIZ	27	0722 E	0810	N11	E25	S550	48 D	1	2	0725	1.35	1.60		115	
SIMEIZ	27	0830 E	0845 D	N09	W02	S549	15 D	1	2	0845	2.72	2.80		98	
PIRCULI	28	0633 E	1026	N06	E10	S550	233 D	2+			18.60			89	
PIRCULI	28	0738	0749	N09	E61	S552	11	1			2.14			50	
PIRCULI	28	0816	0843	S10	E43	S551	27	1			5.06			79	
ABASTUMANI	28	0828 E	0856 D	N05	E12	S550	28 D	2	3	0830	7.25	7.62		103	
PIRCULI	28	0902	0912	S12	E54	S551	10	1			3.81			52	
PIRCULI	28	0904	0917	S16	E55	S551	13	1			2.34			52	
PIRCULI	29	0659	0716	N13	E89	S557	17	1+			8.30			56	
PIRCULI	29	0738	0750	S06	E61	S554	12	1			2.70			51	
KYOTO	30	0525 E	0542 D	S18	E21	S551	17 D	1		0525	2.28			90	

# SOLAR FLARES

JANUARY 1960

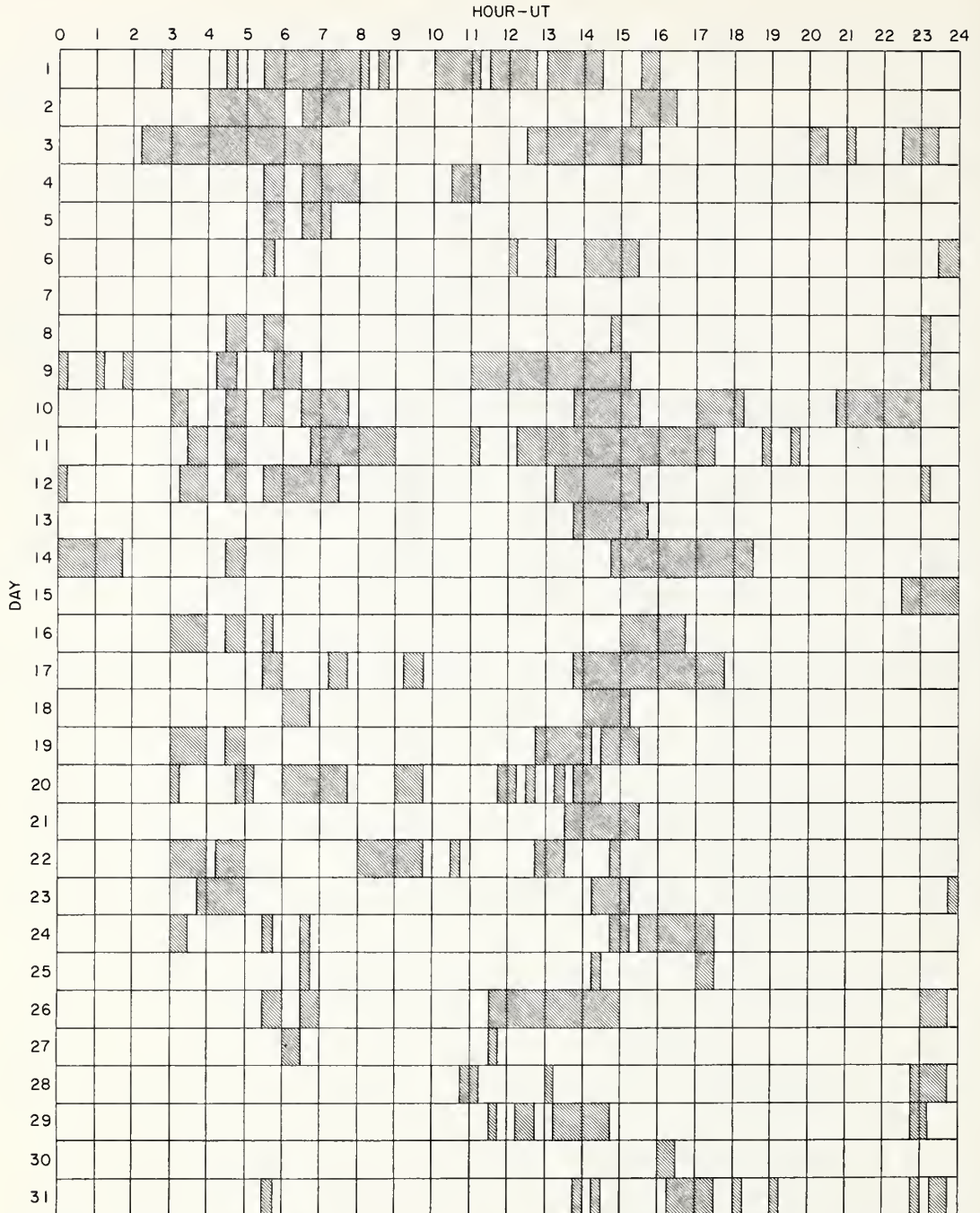
OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME		MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER. DIST.	MATH PLAGE REGION				— UT		MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	
	JAN 1960													
PIRCULI	30	0915 E	0926 D	S14	E20	5551	11 D	1				2.18		51
VOROSHILOV	31	0155	0205 D	S17	E00	5551	55 D	2	1			5.25		81
PIRCULI	31	0717 E	0825	S18	E07	5551	68 D	1				4.02		52
PIRCULI	31	0745 E	0805	N03	W21	5550	20 D	1				2.51		53
PIRCULI	31	0900	0912	N05	W20	5550	12	1				2.00		50

COMMERCE - STANDARDS - BOULDER

These flares are additional addenda to the February 1960 flares published in CRPL-F 187 Part B, March, 1960

ABASTUMANI ABASTUMANI, USSR PIRCULI PIRCULI, USSR E - LESS THAN & - PLUS  
 KHARKOV KHARKOV, USSR SIMEIZ SIMEIZ, CRIMEA, USSR D - GREATER THAN - - MINUS  
 KIEV KIEV GAO, USSR VOROSHILOV VOROSHILOV, USSR U - APPROXIMATE □ - NOT RECORDED  
 KYOTO IKOMA, JAPAN

INTERVALS OF NO FLARE PATROL OBSERVATIONS\*  
(AMENDED)  
JANUARY 1960



Stations Include:

COMMERCE - STANDARDS - BOULDER

Alma Ata  
Anacapri (Swedish)  
Arcetri  
Athens  
Climax  
Dunsink  
Good Hope

Hawaii  
Huancayo  
Kharkov  
Kiev GAO  
Kodaikanal  
Kyoto  
Lockheed

McMath  
Meudon  
Mitaka  
Moscow - G  
Nizamiah  
Ondrejov  
Pirculi

Royal Greenwich Observatory  
Herstmonceux  
Sacramento Peak  
Simeiz  
Uccle  
Voroshilov



# SOLAR FLARES

FEBRUARY 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX.					TIME — U T	MEAS. AREA Sq. Deg.	COOR. AREA Sq. Deg.	MAX. WIDTH H <sub>30</sub>		MAX. INT. %	
					LAT.	MER. DIST.										McMATH PLAGE REGION
PIRCULI	FEB 1960															
	01	1000	1026	1012 U	S16 E71	5562	26	1+	3	1012	2.30	6.27		59		
	VOROSHILOV	02	0038	0129	0049	S16 W15	5551	51	2	2		4.96			93	
	VOROSHILOV	02	0104	0109	0105	S15 E63	5562	5	1	2		2.08			61	
	MOSCOW G	03	0955 E	1033 D		S08 W27	5551	38 D	1	1	1004	7.94	9.14	2.03	140	
	VOROSHILOV	03	2343 E	0110	2347	S16 W44	5551	87 D	1+	2		3.52			105	
	{ KYOTO	03	2346	0027 D		S16 W42	5551	41 D	2		2346	7.27		4.10	130	S-SWF
	VOROSHILOV	04	0027	0108	0034	S13 E34	5562	41	1+	2		2.80			80	
	VOROSHILOV	04	0112	0137	0116	N09 W36	5552	25	2	2		4.21			91	
	ABASTUMANI	04	0738 E	0820	0754 U	S14 W50	5551	42 D	1	1	0815	2.53	3.95	1.70	58	S-SWF
PIRCULI	04	0838 E	0905 D	0848	N08 W39	5552	27 D	2	1	0847	7.25	9.83		92		
	{ KIEV	04	0848 E	0909	0852	N11 W38	5552	21 D	2			6.00			87	
	SIMEIZ	05	0703 E	0725 D		S16 W09	5560	22 D	1	1	0703	2.26	2.30		73	
	KYOTO	06	0158 E	0215 D		N10 W57	5552	17 D	1		0158	1.45		2.00	58	
	ABASTUMANI	06	0720	0734 D	0725	N10 W64	5550	14 D	1	3	0725	1.00	2.31			
	KHARKOV	07	1022 E	1119 D		N12 W85	5552	57 D	1	2	0928	2.29	8.70	1.20		
	KHARKOV	07	1107 E	1138 D		N25 E63	5566	31 D	1	2	1111	5.71	12.00	1.00	60	
	{ KIEV	07	1134	1146	1136	N13 W85	5552	12	1			3.40				
	{ KHARKOV	07	1138	1146 D		N12 W85	5552	8 D	1+	2	1142	3.43	13.00	2.30		
	KYOTO	08	0432 E	0445 D		N10 W85	5552	13 D	1		0432	3.32		1.50	120	
PIRCULI	09	0018 E	0040		S17 W60	5560	22 D	1	2	0021	1.27			79		
	VOROSHILOV	09	0024	0218 D	0120	S15 W37	5562	114 D	1+	2		3.44			100	
	PIRCULI	11	0646 E	0720	0656 U	S19 W63	5562	34 D	1	3	0656	2.48	5.26		52	
	PIRCULI	11	0737	0747	0740	S15 W69	5562	10	1	3	0740	1.10	3.01		50	
	PIRCULI	12	0620	0643	0626	S19 W76	5562	23	1+	3	0626	1.84	6.27		58	
	PIRCULI	12	0710	0750	0717 U	S23 E40	5572	40	1	3	0717	1.93	2.61		50	
	KYOTO	13	0432 E	0505	0435	N12 E26	5570	33 D	1		0436	2.08			140	
	PIRCULI	13	0950	1008	0957	N11 E25	5570	18	1	2	0957	2.75	3.28		50	
	PIRCULI	13	1000	1033	1017 U	S25 E23	5572	33	1	2	1017	3.21	3.63		52	
	PIRCULI	13	1042 E	1055	1044 U	N14 E17	5570	13 D	1	2	1044	1.84	2.08		50	
PIRCULI	13	1055	1102	1058	N23 W23	5566	7	1	2	1058	2.30	2.94		52		
	PIRCULI	13	1056	1110	1101	S24 E23	5572	14	1	2	1101	1.84	2.08		53	
	KYOTO	19	0536	0603 D		N09 W17	5574	27 D	1		0536	9.97		1.49	100	
	KYOTO	23	0033	0037 D		N07 E38	5581	4 D	1		0033	2.91		1.33	100	
	PIRCULI	23	0712 E	0947 D	0723 U	S20 E25	5580	155 D	1+	2	0723	9.18	10.40		62	
	KYOTO	23	2337	0027		N06 E48	5581	50	1		2347	1.45		1.50	80	
	VOROSHILOV	24	0040	0122	0104	S21 E14	5580	42	1	2		2.62			70	

# SOLAR FLARES

FEBRUARY 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	LAT.	MER. DIST.	MATH PLAGE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H <sub>g</sub>	MAX. INT. %
KYOTO	FEB 24	0048	0058	S21 E13		5580	10	1		0055	4.57		1.58	100
	24	0524		N05 E22		5581	□	1		0524	3.74			100
	24	2321	0010	S22 E00		5580	49	1		2321	3.12			100
KYOTO PIRCULI	25	0600	0610 D	N11 E35		5584	10 D	1		0600	1.87			100
	25	0755 E	0807 D	S19 W06		5580	12 D	1+	2	0800	9.18	9.56		59
{ PIRCULI SIMEIZ PIRCULI PIRCULI	26	0127	0140 D	N08 E22		5584	13 D	1		0127	5.82		1.32	100
	26	0700	0955	S24 W13		5580	175	3	2	0716	22.04	25.10		77
	26	0713 E	0845 D	S21 W18		5580	92 D	2	1	0713	13.61	14.50		88
	26	0845 E	0945	S10 E76		5587	60 D	1+	2	0849	1.84	6.50		56
PIRCULI	28	1018 E	1037	N14 W10		5584	19 D	1	2	1021	1.84	2.01		60

These flares are additional addenda to the January 1960 flares published in CRPL-F 186 Part B, February 1960.

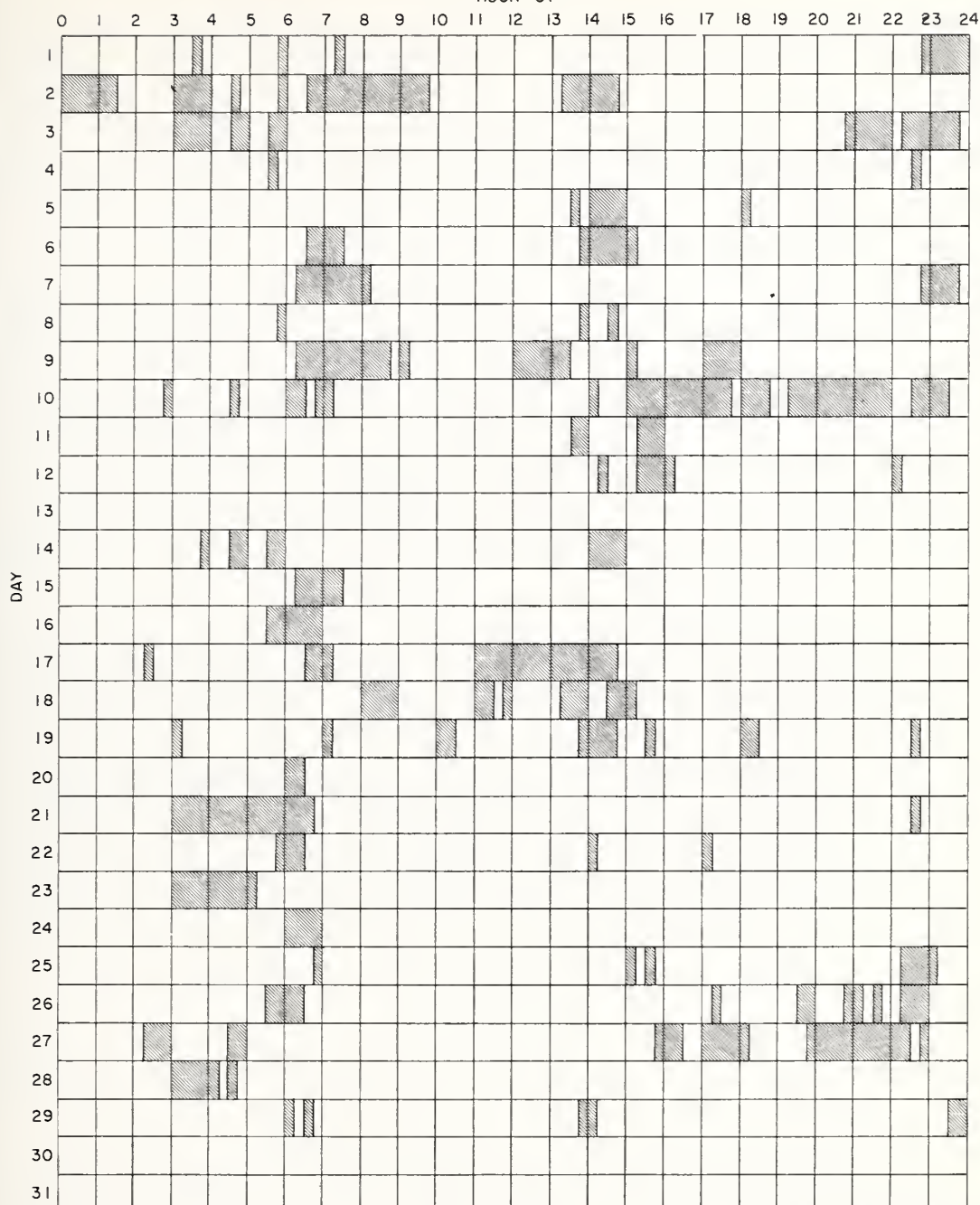
ABASTUMANI ABASTUMANI, USSR PIRCULI PIRCULI, USSR E - LESS THAN & - PLUS  
KIEV KIEV GAO, USSR SIMEIZ SIMEIZ, CRIMEA, USSR D - GREATER THAN - - MINUS  
KYOTO IKOMA, JAPAN VOROSHILOV VOROSHILOV, USSR U - APPROXIMATE □ - NOT RECORDED

COMMERCE - STANDARDS - BOULDER

# INTERVALS OF NO FLARE PATROL OBSERVATIONS (AMENDED)

IIIr

FEBRUARY 1960  
HOUR-UT



Stations Include:

COMMERCE - STANDARDS - @DUALSER

Alma Ata	Huancayo	McMath	Royal Greenwich Observatory
Anacapri (Swedish)	Kharkov	Meudon	Herstmonceux
Arcetri	Kiev GAO	Mitaka	Sacramento Peak
Athens	Kodaikanal	Moscow - G	Simeiz
Dunsink	Kyoto	Nizamiah	Uccle
Good Hope	Lockheed	Pirculi	Voroshilov
Hawaii			

SOLAR FLARES  
MARCH 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX. PHASE	APPROX.	LAT.				MCNATH PLAGE REGION	TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH H <sub>g</sub>	MAX. INT. %
{MEUDON GOOD HOPE	MAR 1960														Slow S-SWF	
	01	1237	1254 D		N22 W08	N22 W08	5586	17 D	1		1241	2.20	2.50			
	01	1241 E	1307		N22 W09	N22 W09	5586	26 D	1							
	02	0033 E	0041		N22 W13	N22 W13	5586	8 D	1		0035	1.66		1.66		
	02	0037 E	0055		N21 W14	N21 W14	5586	18 D	1+		0039	6.03	7.30	3.49		
	02	0036	0040	0038	N08 W74	N08 W74	5581	4	1+	2		2.44		63		
	02	0924	1006	1038	S11 E12	S11 E12	5587	42	1+	2	1038	3.60	3.60	90		
	02	0925	1020	0946	S10 E13	S10 E13	5587	55	1			5.21		60		
	02	1015	1147 D	1107	N25 W20	N25 W20	5586	92 D	2			9.78		101		
	02	1102	1130 D	1105	N20 W21	N20 W21	5586	28 D	1+	2	1105	2.72	3.20	95		
{MEUDON VOROSHILOV	04	1505	1525	1510	N03 E75	N03 E75	5591	20	1+						S-SWF	
	05	0024 E	0044 D		N12 W85	N12 W85	5584	21 D	1+	2	0026	.63				85
	05	0910 E	0935 D	0910 U	S07 E80	S07 E80	5593	25 D	2			15.30		50		
	05	0922	0935 D	0926 U	S00 E65	S00 E65	5591	13 D	1			6.24		50		
	05	0930 E	1044 D	0930 U	N09 E50	N09 E50	5590	74 D	1+			7.33		53		
	06	0940	1020 D		N22 E60	N22 E60	5592	40 D	1			.90	2.20			
	06	0950 E	1000		N23 E62	N23 E62	5593	10 D	1			1.00	2.60			
	06	1050	1106 D	1055	S08 E67	S08 E67	5593	16 D	1		1055	1.00	2.50			
	06	1052	1106 D	1059	N23 E82	N23 E82	5592	14 D	1		1059	1.00		77		
	06	2304	0031	2318	S24 W26	S24 W26	5587	87	1	2		4.25				
{GOOD HOPE UCCLE	07	0919	0942		N13 E74	N13 E74	5595	23	1		0923	1.10				
	07	0921	0930	0924	N09 E73	N09 E73	5595	9	1+	2	0924	4.00	12.00			
	07	1244	1244	1228	N09 E72	N09 E72	5595	16	1	4	1228	2.00	6.00			
	09	0923	0950	0927	S10 W68	S10 W68	5587	27	1		0927	.90	2.50			
	09	1104	1116	1109	S10 W69	S10 W69	5587	12	1		1109	1.00	2.90			
	09	1227	1243	1231	S10 W69	S10 W69	5587	16	1		1231	.90	2.60			
	09	1257	1308 D	1304	S10 W69	S10 W69	5587	11 D	1		1304	1.00	2.90			
	10	0816	0836	0818	S06 E01	S06 E01	5593	20	1	2	0818	1.80	1.80	80		
	10	0926	0945	0928	N27 E38	N27 E38	5595	19	1	3	0928	2.00	3.00			
	10	1043	1052		N19 E75	N19 E75	5598	9	1	1						
{NIZAMIAH KIEV	11	0344 E	0352 D	0347	N22 E04	N22 E04	5592	8 D	1	2	0347	2.43	3.19		S-SWF	
	11	1055	1130	1115	N25 W02	N25 W02	5592	35	1			1.96		1.70		
	11	1056	1121	1104	N22 W12	N22 W12	5592	25	1	2	1104	2.27	3.00	102		
	12	0815 E	0840	0817	S08 W15	S08 W15	5593	25 D	1		0817	2.30	2.40	80		
	12	0950	1022	0954	N12 W86	N12 W86	5588	32	1		0954	.50				
	13	0032 E	0043		S11 E90	S11 E90	5600	11 D	1	1	0035	1.01		5.14		
	13	0210	0243		S11 E89	S11 E89	5600	33	1	1	0215	3.14		3.14		
	13	0750 E	0830 D	0756 U	N03 W33	N03 W33	5591	40 D	1	1		1.90	2.37			
	13	0800 E	0845 D		N01 W35	N01 W35	5591	45 D	1	1	0800	1.80	2.20	56		
	14	0010	0045	0014	N10 W42	N10 W42	5591	35	1	2		1.63		74		
14	0052	0124	0057	N10 W43	N10 W43	5591	32	1	2		1.54		71			

# SOLAR FLARES

MARCH 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			LOCATION			DUR. TION — MINUTES	IM. POR. TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	MAX. PHASE	APPROX. LAT.	MED. DIST.	MC-MATH PLAGE REGION				TIME — U T	MEAS. AREA Sq. Deg.	COOR. AREA Sq. Deg.	MAX. WIDTH H <sub>o</sub>		MAX. INT. %
{PIRCULI SIMEIZ GOOD HOPE	14	0655	0950 D	0750 D	S11 W43		5593	175 D	2		0748	21.50	12.00		61	
	14	0731 E	0820 D	0748 U	S10 W44		5593	49 D	1+		0749	9.07	4.20		63	
	14	0740	0817	0749	S09 W42		5593	37	1			3.10				
MITAKA	15	0308	0323	0315	S10 W49		5593	15	1		0315	2.51	3.67	2.22	96	
	15	0511 E	0526 D		S11 E58		5600	15 D	1		0511	1.50	1.50	2.38	96	
	15	0549 E	0627 D	0553 U	S02 W60		5593	38 D	1+			7.87			51	
{PIRCULI PIRCULI PIRCULI	15	0549 E	0740 D	0635 U	S08 W60		5593	111 D	1+			7.87			50	
	15	0717 E	0928 D	0925 U	S09 E58		5600	131 D	1			5.23			59	
	15	1240	1248	1241	N23 W60		5592	8	1		1241	.90	2.30			
GOOD HOPE	19	0902 E	0915		N12 W90		5595	13 D	1		0910	.80				
	19	1446	1520		N24 E58		5607	34	1	4						
KHARKOV	21	1043 E	1051		N25 E37		5607	8 D	1		1045			1.50		S-SWF
	21	1520	1547	1530	N19 E33		5607	27	2	4	1530	6.00	8.00			
{GOOD HOPE UCCLE	22	0856	0926	0859	N24 E77		5611	30	1		0859	.90				
	22	0909 E			N25 E80		5611	□	3			.90				
	22	0859	0916	0904	N22 W60		5599	17	1		0904	.90	2.10			
{GOOD HOPE KRASNAYA KHARKOV	22	0901	0911	0904	N19 W60		5599	10	1		0904	.90	2.00		65	
	22	0901	0915 D	0905	N21 W59		5599	14 D	1		0903	4.57	10.20	2.00		
	22	0909 E	0936		N20 W60		5599	27 D	1	3						
{ALMA-ATA ALMA-ATA GOOD HOPE	23	0633	0743	0656	N09 E05		5606	70	1	2	0656	2.65	2.80		54	
	23	0633	0744	0656	N11 E01		5606	71	1	2	0656	3.64	3.90		54	
	23	0636	0704	0643	N11 E03		5606	28	1		0643	2.90	3.00			
ALMA-ATA	24	0645	0720 D	0705	N20 W32		5604	35 D	2	1	0705	4.31	5.80		84	
	24	1003	1040	1015	N18 W33		5604	37	1+	4	1129	1.14	3.20	1.70		
	24	1127	1133 D		S26 E74		5612	6 D	1	4						
GOOD HOPE	25	0927	0942	0932	N19 W45		5604	15	1		0932	1.70	2.70			
	25	0946	1026	1004	N19 W45		5604	40	1		1004	1.70	2.70			
PIRCULI	26	0558 E	0611 D	0603	N16 W60		5604	13 D	1			6.92			53	
	26	0558 E	0611 D	0606 U	S13 E03		5609	13 D	1			5.57			51	
	26	1000 E	1007 D		S13 W82		5600	7 D	1	4	1005	.52	2.70		72	
VOROSHILOV	26	2240 E	2342		N24 W02		5610	62 D	1	3	2258	2.35				
	27	0153 E	0200		N20 W46		5607	7 D	1+	1	0153	3.72	6.14	3.70	120	Slow S-SWF
	27	0407 E	0438	0412	N20 W49		5607	31 D	1	1	0412	1.51	2.49	2.70	107	
PIRCULI	27	0657 E	0912 D	0740 U	N22 W46		5607	135 D	3			26.40			80	
	27	0734 E	0830 D	0740 U	N20 W52		5607	56 D	1	2	0740	2.26	4.20		81	
	27	0737 E	0749 D	0741	N20 W53		5607	12 D	1+	2	0741	2.70	5.00		95	Slow S-SWF
{KRASNAYA GOOD HOPE	27	0801 E	0853 D	0822 U	N22 W44		5607	52 D	1	2	0892	1.82	3.00		85	
	27	0836 E	0923		N23 W48		5607	47 D	2		0836	3.10	5.30			
	27	0911	0933	0915	S25 E44		5612	22	1		0915	1.50	2.10			
ALMA-ATA	28	0555 E	0800 D	0652	N12 E45		5615	125 D	1	2	0652	3.32	5.10		57	
	28	0729	0753	0736	N19 W82		5604	24	1		0736	.90				



# SOLAR FLARES

MARCH 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.					MEAS. AREA Sq. Deg.	CORR. Sq. Deg.	MAX. WIDTH Ha	
SIMEIZ	28	0838	0855 D	N18 W70	5607	17 D	1	1	0841	1.08	3.30		70
{ PIRCULI ALMA-ATA ABASTUMANI	29	0640 E	0945 D	N12 E30	5615	185 D	2+			24.60			114
	29	0650	0722 D	N13 E33	5615	32 D	1+		0703	3.32	4.30		81
	29	0656	1016	N12 E31	5615	200	2+		0746	10.88	13.86	3.40	108
	29	0835 E	0845 D	N12 E30	5615	10 D	2		0837	5.80	7.10	1.80	122
{ KODAIKNAL PIRCULI ABASTUMANI	29	0804	0820	N25 W74	5607	16	1+			9.51			62
	29	0837 E	0847 D	N22 W70	5607	10 D	1+			1.63	6.74		76
	29	0837 E	0931 D	N22 W77	5607	54 D	2			14.00			76
	29	0959 E	1012 D	N19 W86	5607	13 D	1+			1.82	9.22		76
{ MITAKA MITAKA GOOD HOPE SIMEIZ	30	0125 E	0132	N17 W86	5607	7 D	1		0127	1.01		2.60	134
	30	0216	0240	N09 E15	5615	24	1+		0218	6.03	6.63	3.37	120
	30	0717 E	0754	N12 E22	5615	37	1		0725	4.50	5.10		
	30	0719 E	0800 D	N11 E18	5615	41 D	1+		0736	4.71	5.30		118
{ SIMEIZ ALMA-ATA ALMA-ATA GOOD HOPE	30	0856 E	0907 D	N10 E20	5615	11 D	1		0901	2.26	2.50		74
	31	0442 E	0543	N13 E04	5615	61 D	1+		0505	5.66	6.10		66
	31	0442 E	0545	N08 E02	5615	63 D	1		0508	2.65	2.80		70
	31	0655	0715	S13 W61	5609	20	1+			8.06			64
{ GOOD HOPE PIRCULI SIMEIZ GOOD HOPE	31	0700	0716	S11 W61	5609	16	1		0702	1.20	2.50		
	31	0715	0826 D	N11 E02	5615	71 D	1+			11.80			57
	31	0800 E	0805 D	N09 E01	5615	5 D	1		0805	1.17	1.20		108
	31	0806 E	0807 D	N12 E04	5615	1 D	1		0806	3.00	3.10		
{ MEUDON KIEV	31	0840	0920 D	N13 E03	5615	40 D	1						
	31	1116 E	1326 D	N10 W00	5615	130 D	2			10.40			66

These flare reports are addenda to the March 1960 flares published in CRPL-F #188, Part B, April 1960.

CAPRI G ANACAPRI - GERMAN  
CAPRI S ANACAPRI - SWEDISH  
GOOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
KIEV\* KIEV UNIVERSITY  
KODAIKNAL KODAIKNAL  
KRASNAYA KRASNAYA PAKHRA  
LOCKHEED LOS ANGELES

MOSCOW-G MOSCOW - GAISH  
R O EDIN ROYAL OBSERVATORY, EDINBURGH  
R O HERST GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX  
SAC PEAK SACRAMENTO PEAK  
SCHAUMS SCHAUMS  
USNEL UNITED STATES NAVAL RESEARCH LABORATORY

SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE  
ARBITRARY UNITS (0-40), NOT PERCENT  
OF CONTINUOUS SPECTRUM.

E - LESS THAN & - PLUS  
D - GREATER THAN - - MINUS  
U - APPROXIMATE □ - NOT REPORTED

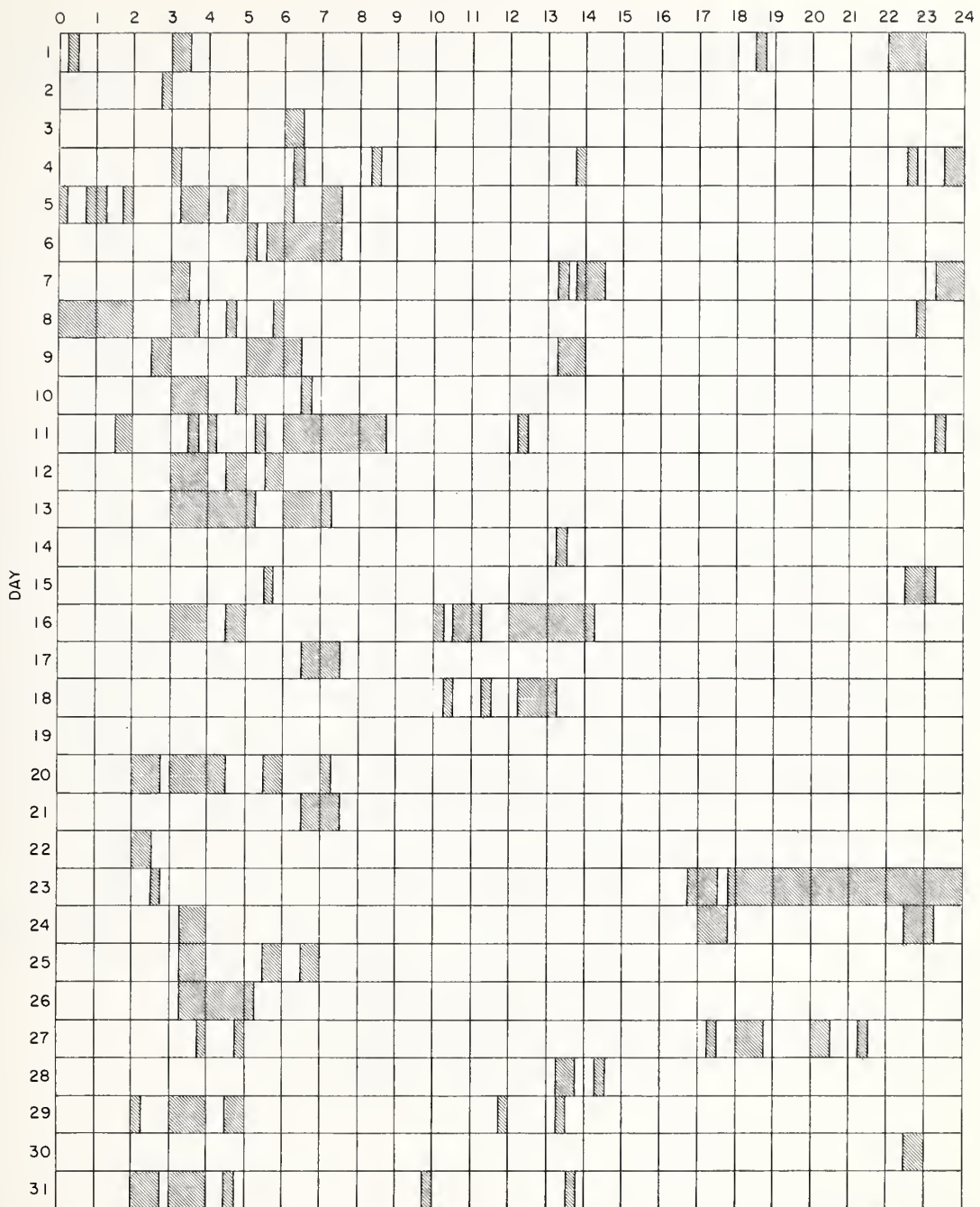
LOCKHEED OBSERVATIONS: ALL VALUES IN THE MAXI-  
MUM INTENSITY COLUMN ARE ARBITRARY UNITS ON A  
SCALE OF 10 TO 40 - NOT PERCENT OF THE CONTINUOUS  
SPECTRUM.

COMMERCE - STANDARDS - BOULDER

# INTERVALS OF NO FLARE PATROL OBSERVATIONS (AMENDED)

IIIv

MARCH 1960  
HOUR-UT



COMMERCE - STANDARDS - BOULDER

Stations Include:

Abastumani	Huancayo	McMath	Royal Greenwich Observatory
Alma Ata	Kharkov	Meudon	Herstmonceux
Anacapri (Swedish)	Kiev GAO	Mitaka	Sacramento Peak
Arcetri	Kodaikanal	Moscow G	Simeiz
Athens	Krasnaya Pakhra	Nizamiah	Uccle
Good Hope	Kyoto	Ondrejov	Voroshilov
Hawaii	Lockheed	Pirculi	

(SHORT-WAVE RADIO FADEOUTS)

MAY 1960

May 1960	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 190B
4	1015	1050	S-SWF	5	3	KU, <u>NE</u> , SW, CW***	1015
5	0305	0354	Slow S-SWF	5	1+	<u>AD</u> , AN, OK	*
6	1346	1400	S-SWF	5	1	<u>BE</u> , HU, MC, PR	
6	1427	1658	Slow S-SWF	5	3	<u>BE</u> , BO, <u>FM</u> , HU, MC, NE, PR, WS	1404
9	0208	0320	Slow S-SWF	1	2+	<u>OK</u>	*
9	0700	0838	Slow S-SWF	1	2	<u>OK</u>	0704E
9	1220	1315	Slow S-SWF	5	2-	<u>BE</u> , FM, HU, <u>MC</u>	
9	2325	2340	S-SWF	3	1	<u>OK</u> , TO	2310
10	0208	0238	S-SWF	1	1	<u>OK</u>	*
11	1402	1435	Slow S-SWF	5	1	BO, FM, HU, <u>MC</u> , PR	1338
11	2052	2104	S-SWF	5	1	AD, BE, <u>MC</u> , PR	2050
11	2105	2155	Slow S-SWF	5	2+	AD, BE, BO, FM, HU, LA, <u>MC</u> , OK, PR, TO, WS	2050
12	0220	0242	S-SWF	1	1-	<u>OK</u>	*
12	0833	0853	Slow S-SWF	3	2	<u>BR</u> , SW	0817E
12	1120	1132	Slow S-SWF	3	1+	<u>BR</u> , <u>NE</u>	*
12	1348	1722	Slow S-SWF	5	3	FM, HU, LA, MC, NE, PR, SW, WS, CW***	1310E
13	0512	0853	S-SWF	5	3+	AD, CA, NE, <u>OK</u> , PU, SW, TO, CW+, CW***	0522E
14	0348	0430	S-SWF	1	1-	<u>OK</u>	*
15	0312	0640	S-SWF	5	3	AD, AN, <u>OK</u>	*
15	1518	1530	S-SWF	5	1	BE, BO, FM, HU, <u>MC</u> , PR	1412
16	0510	0550	Slow S-SWF	1	1	<u>OK</u>	*
17	0205	0232	S-SWF	5	1	AD, AN, <u>OK</u>	*
17	0418	0445	S-SWF	1	1	<u>OK</u>	*
24	2225	2253	C-SWF	4	1+	<u>AD</u> , BO, FM	
25	0230	0325	S-SWF	5	2	AD, AN, <u>OK</u> , TO, CW+	*
25	0450	0520	Slow S-SWF	1	1	<u>OK</u>	0454E
25	0647	0728	Slow S-SWF	1	1-	<u>OK</u>	*
25	1755	1920	C-SWF	5	2-	AN, <u>BE</u> , HU, MC, WS	1752
26	0914	1000	S-SWF	5	2	<u>BR</u> , JU, NE, PU, SW, CW***	0818
27	1415	1445	Slow S-SWF	5	1+	<u>BE</u> , FM, MC, PR, PU, WS	1414
27	2128	2140	S-SWF	5	1	AD, AN, BE, BO, LA, <u>MC</u> , OK, PR, WS	2125
28	1410	1440	S-SWF	5	1+	BE, FM, HU, <u>MC</u> , NE, PR	1357
29	0739	0754	S-SWF	5	1	NE, OK, <u>PU</u>	0725E
30	0635	0705	S-SWF	1	1-	<u>OK</u>	*
30	0950	1008	S-SWF	1	2	<u>PU</u>	*
30	1800	1822	S-SWF	4	1-	BE, <u>MC</u> , PR, WS	1802
31	2115	2133	S-SWF	5	1+	AD, <u>BE</u> , HU, LA, MC, PR, WS	2100E

BR = Breisach, C.F.R.

CA = Canberra, Australia

JU = Juhlesruh, C.D.R.

KU = Kuhlungsborn, G.D.R.

LA = Los Angeles, Calif.

NE = Nederhorst den Berg, Netherlands

PU = Prague, Czechoslovakia

SW = Enköping, Sweden

TO = Hiraio Radio Wave Observatory, Japan

CW\* = Cable and Wireless, Barbadoes

CW\*\* = Cable and Wireless, Somerton, England

CW\*\*\* = Cable and Wireless, Brentwood, England

CW+ = Cable and Wireless, Hong Kong

CW++ = Cable and Wireless, Singapore

COMMERCE - STANDARDS - BOULDER



( Sudden Cosmic Noise Absorption  
Sudden Enhancements Of Atmospherics  
Solar Noise Bursts At 18 Mc.

MAY 1960

May 1960	CLASS			WIDE SPREAD INDEX	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
1			1	4	1610		1612		<u>BO</u> , MC
1			1	4	1633		1636		<u>BO</u> , MC
1			1	4	1741		1742		<u>BO</u> , MC
1			2	4	1748		1755		<u>BO</u> , MC
1			1	4	1821		1823		<u>BO</u> , MC
2			1	4	1450		1505		<u>BO</u> , MC
3		1		3	1027	1031	1058		<u>A1</u> , A5
3		1+		3	1240	1252			<u>A1</u> , A3, A5
3		2		3	1302	1319	1340		<u>A1</u> , A3, A5
3			1	5	1917		1923		<u>BO</u> , HA, MC
4		1		3	1016	1029	1125		<u>DU</u> , NE
4			1	1	1029		1034		<u>RE</u>
4			2	4	1600		1617		<u>BO</u> , MC
{ 6		2		5	1430	1453	1630D		A1, A2, A3, A9, <u>BO</u> , DU, MC, NE
{ 6			3	4	1431		1440		<u>BO</u> , MC
{ 6	3			4	1440E		1615		<u>BO</u> , MC
6		1-		3	1725	1730	1745		A1, <u>A2</u>
{ 6	2			1	1832	1854	2020	55	<u>BO</u>
{ 6		2		5	1835				A2, <u>BO</u> , MC
{ 6	3			1	2206	2255		75	<u>BO</u>
{ 6		2		1	2208	2305			<u>BO</u>
7			1	4	1829		1830		<u>BO</u> , MC
7			1	5	2028		2029		<u>BO</u> , HA, MC
7			1	5	2046		2048		<u>BO</u> , HA, MC
9			1	4	1855		1857		<u>BO</u> , MC
9			1	5	1928		1931		<u>BO</u> , HA, MC
9			1	4	2148		2150		<u>BO</u> , HA
9			1	5	2158		2202		<u>BO</u> , HA, MC
{ 9	1			4	2326	2332	2345	25	<u>BO</u> , MC
{ 9			1	5	2348		2351		<u>BO</u> , HA
{ 11	3			5	2050	2119	2210	60	<u>BO</u> , HA, MC
{ 11		3		5	2051	2125	2220		A9, <u>BO</u> , MC
12		1+		3	0947	0953	1040		A1, A3, <u>A10</u>
{ 12	2			4	1345	1410		40	<u>BO</u> , MC
{ 12		2		5	1345	1404	1531		A1, <u>BO</u> , <u>DU</u> , MC
12		1+		3	1440	1450	1515D		<u>A1</u> , A10
12			1	1	1455		1500		<u>RE</u>
12			1	4	1640		1651		<u>BO</u> , MC
12			2	5	1748		1751		<u>BO</u> , MC, RE
12			1	5	2212		2214		<u>BO</u> , HA
{ 13				1	0520				<u>CO</u>
{ 13				1	0522	0537	0601		<u>DU</u>
13			2	4	1520		1605		<u>BO</u> , MC (Series of bursts)
13			1	4	1758		1915		<u>BO</u> , MC (Series of bursts)
13			1	5	2035		2048		<u>BO</u> , HA, MC
13			1	5	2138		2144		<u>BO</u> , HA, MC
13			2	5	2153		2202		<u>BO</u> , HA, MC

## IONOSPHERIC EFFECTS OF SOLAR FLARES

( Sudden Cosmic Noise Absorption  
Sudden Enhancements Of Atmospherics  
Solar Noise Bursts At 18 Mc.

MAY 1960

DATE	CLASS			DEFINITENESS	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	REMARKS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
14			2	5	1300E		0200D		BO, <u>MC</u> , HA (Noise storm) Strong peaks at 1435, 1502, 1522, 1547, 1650, 1827, and 2040.
15			2	5	1300E		0200D		BO, <u>MC</u> , HA (Noise storm) Peaks at: 1520, 1808, 1947, 2152, 2308, and 2320.
15	1			4	1524	1527	1540	20	BO, MC
15		1-		5	1525	1527	1558		A1, A3, A9
16		3		3	1310	1323			A1, A3, <u>A5</u>
16			1	1	1455		1459		RE
16		2+		3	1900	1925			A3, <u>A5</u>
17			2	4	1743		1751		BO, MC
17			3	4	1757		1900		BO, <u>MC</u> (Noise storm)
18			1	5	1300U		0200U		BO, HA, MC, (Noise storm) peaks at 1752 and 2110.
19			2	4	1610		1615		BO, MC
19			1	4	1801		1803		BO, MC
19			2	5	1914		1921		BO, HA, <u>MC</u>
19			2	5	1957		2011		BO, HA, <u>MC</u>
19			2	5	2245		2300		BO, <u>HA</u>
20			1	5	1300E		0200D		BO, HA, MC, RE (Noise storm)
21			1	5	1300E		0200D		BO, HA, MC (Noise storm)
23			1	5	1938		1943		BO, HA, MC
23			1	5	2043		2045		BO, HA, MC
23			1	4	2132		2134		BO, MC
24		2		1	0627		0742		JU
25			1	1	0226		0228		HA
25	1			1	0228	0233	0250	25	HA
25		2		1	0231		0331		HO
25			2	5	1300E		0200D		BO, HA, MC, RE (Noise storm)
26		□		1	0908	0934	1024		DU
26			2	5	1300E		0200D		BO, HA, MC, RE (Noise storm)
27			2	5	1300E		0200D		BO, HA, MC, RE (Noise storm)
27		1+		5	1417	1437			A1, A3, A5, <u>BO</u> , DU
27			2	4	1418		1428		BO, MC
27	1			1	1428	1430		10	BO
27		1		3	2017	2022	2045D		A1, A3, <u>A5</u> , A10
27		1+		4	2129	2135U	2200		A2, A3, A5, A6, <u>A10</u>
27	1			5	2130	2133	2155	25	BO, HA
28		1		5	1413	1425	1445		A3, <u>BO</u> , DU, MC
28	1			4	1414	1420	1440	15	BO, MC
29			1	4	1542		1547		BO, MC
30			1	5	1647		1649		BO, MC, RE
30			2	5	1706		1712		BO, MC, RE
30			2	5	2042		2047		BO, HA, MC, RE
30			3	5	2242		2245		BO, HA, MC, RE
31		□		1	0717	0703	0746		DU
31			1	4	1850		1858		BO, MC
31			1	5	2017		2024		BO, HA, MC
31	1			5	2116	2123	2140	20	BO, HA, MC

COMMERCE - STANDARDS - BOULDER

Notes: CO = College, Alaska.

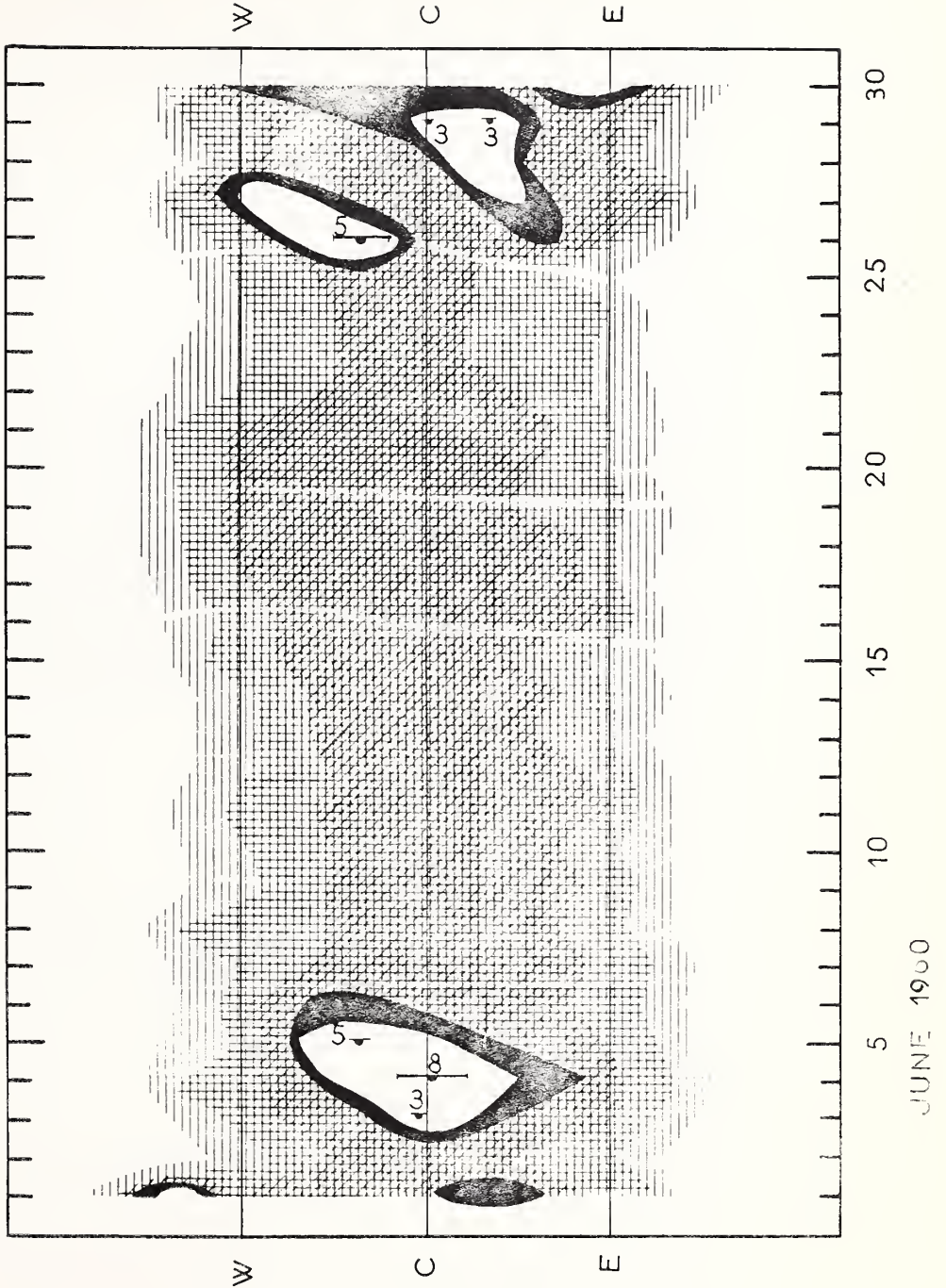
Sacramento Peak had no usable record for May 1960.

SOLAR RADIO EMISSION  
INTERFEROMETRIC OBSERVATIONS

JUNE 1960

Nançay

169 Mc



# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

Ottawa

JUNE 1960

2800 Mc

June 1960	Event	Frequency	Duration	Amplitude		Remarks
				Peak	Peak	
1	4 Post Increase	b1045	>3 15		25*	*Maximum reached during this period
1	6 Complex	2003	16	2005.5	9	
1	1 Simple 1	2149	5	2151	3	
3	1 Simple 1	1348	3	1349	3	
4	2 Simple 2	2100.5	2	2101.3	9	
5	8 Group (2)	2218	>1 34			
	1 Simple 1	2218	7	2221.5	7	
	6 Complex	2241	16	2245	25	
	4 Post Increase		>55		5	
6	2 Simple 2	2231	4	2232.7	9	
8	8 Group (2)	1750	1 54			
	3 Simple 3A	1750	50	1817	10	
	2 Simple 2	1753	3.5	1754	35	
	3 Simple 3	1854	50	1918	5	
8	1 Simple 1	2032.5	1.5	2033	7	
8	1 Simple 1	2118.5	3.5	2119.5	6	
9	3 Simple 3	1615	15	1620	4	
9	6 Complex	2023	20	2039	50	
	4 Post Increase		2 10		10	
9	2 Simple 2 f	2315	5	2315.8	23	
	5 Absorption	2320	35		-5	
10	2 Simple 2	1439.5	5	1441	10	
10	1 Simple 1	1933	3	1933.5	7	
10	3 Simple 3A	1949	40	indet.	5	
	2 Simple 2	1952.5	7	1954	12	
11	1 Simple 1	2025.5	1	2026	4	
11	3 Simple 3	2220	25	2230	5	
13	2 Simple 2	1709.5	6	1712	77	
	4 Post Increase		45		5	
14	6 Complex f	0004.5	12	0010	235	
	4 Post Increase		>10		7	
14	2 Simple 2	1043	4	1044.5	35	In sunrise oscillations.
	4 Post Increase		10		8	
14	3 Simple 3	2215	25	2222	5	
18	1 Simple 1	1750.5	4	1751.5	5	
19	6 Complex f	1331	14	1332	110	
21	1 Simple 1	2314	3	2315.5	5	In sunrise oscillations.
25	2 Simple 2f	1026	5	1026.9	650	
25	6 Complex f	1148	1 28	1208.5	425	
	4 Post Increase		3 44		20	
25	2 Simple 2f	1701	15	1705	160	
	4 Post Increase		1 00		8	
25	2 Simple 2	1950	6	1951.3	13	
25	7 Period Irregular Activity	2037	40	2046	700	
26	3 Simple 3 A	1350	1 10	1417	8	
	6 Complex f	1358.8	14	1408	200	
26	1 Simple 1	1649	2.5	1650	4	
26	2 Simple 2	1802	5	1803.5	55	In Interference
26	3 Simple 3 f	2045	1 00	2053.3	10	
26	8 Group (2)	2259.5	8.5			
	2 Simple 2	2259.5	3	2300.5	12	
	2 Simple 2	2303	5	2305	12	
27	3 Simple 3A	0002	>28	indet.	13	In sunset oscillations
	2 Simple 2	0012	4	0012.8	30	
27	8 Group (2)	1118	9			
	1 Simple 1	1118	2	1118.8	7	
	2 Simple 2	1124	3	1124.5	10	
27	3 Simple 3 A	1148	24	1157	7	
	6 Complex	1149	5	1150.2	30	
	2 Simple 2	1200	2.5	1201	11	
27	1 Simple 1	1713.5	3.5	1715.2	7	
27	2 Simple 2 f	2140	38	2154	140	
	4 Post Increase		>2 00		30	
28	6 Complex f	1215	10	1216.5	30	
28	3 Simple 3 A	1855	1 15	1915	14	
	7 Period Irregular Activity	1858	10	1859	35	
28	2 Simple 2 f	2045	3.5	2047.5	55	

COMBINE - STANDARDS - BUILDER

## TIMES OF OBSERVATION

## OTTAWA

HOURS OF OBSERVATION: APRIL, MAY, JUNE 1960

## OBSERVING PERIOD:

April 1200 UT - 2320 UT (approx.)  
May 1130 UT - 2345 UT (approx.)  
June 1120 UT - 2410 UT (approx.)

with the following exceptions:

(1) No observations: April 4 - 1825 - 2050

(2) Observations commenced:

April 5 - 1515  
April 20 - 1520  
April 21 - 1525  
April 22 - 1525  
May 28 - 1445  
June 13 - 1455  
June 29 - 1500  
June 30 - 1505

(3) Continuous observations on all days have been interrupted for receiver calibration and by sporadic interference.

# SOLAR RADIO EMISSION

## OUTSTANDING OCCURRENCES

### JUNE 1960

BOULDER

167 MC

June 1960	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity	June 1960	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	3	1234.4	1234.8	1.5	2*	19	3	0054.0	0054.0	1.1	2
1	2	1328.9	1328.9	1.6	2	19	3	0056.3	0056.3	0.3	2
1	3	1916.8	1916.8	0.4	2	19	8	1330.0	1332.0	3.0	3
1	3	1919.6	1919.6	0.3	2	19	8	1333.0	1335.8	5.0	3
1	9a	2003.4	2004.3	4.2	2	19	3	1339.2	1339.5	1.0	2
1	9b	2014.0	2019.4	36	2	19	2	1341.0	1344.9	4.5	2
2	3	0023.3	0023.3	0.2	2	19	2	1541.4	1541.4	2.0	2
2	3	1816.8	1817.2	1.5	2	20	3	0128.0	0128.5	2.0	3**
3	3	0040.0	0040.1	0.2	2	20	3	0134.5	0135.9	2.0	2**
3	2	1158.6	1158.6	2.4	2*	20	3	0152.0	0152.3	1.8	2**
3	3	1204.3	1204.7	0.7	2*	22	3	1744.0	1744.0	0.2	2
3	3	1933.6	1933.6	0.3	2	22	2	1752.0	1752.2	1.5	1
3	3	1940.5	1940.5	0.1	2	23	3	0149.0	0149.5	2.0	2**
4	3	0006.5	0006.5	0.1	2	23	3	0151.0	0151.2	1.0	2**
4	6	1130 E		882 D	2	23	2	1240.0	1241.5	4.0	1
6	3	1155.2	1155.2	0.4	2*	23	3	1556.5	1557.0	1.5	3
6	3	1243.0	1243.0	1.0	2*	24	3	1449.0	1449.0	0.8	2
6	3	1458.0	1458.0	0.3	2	24	3	1740.5	1740.5	0.3	2
6	3	1741.1	1741.1	0.1	2	25	3	0116.2	0117.2	1.6	2**
6	3	1823.2	1823.2	0.2	3	25	3	0120.0	0120.0	1.4	2**
6	3	1940.0	1940.0	0.2	2	25	3	1135.9	1135.9	0.9	2*
6	3	1957.0	1957.6	1.1	3	25	9	1156.0	1237.6	209	3*
6	3	2002.5	2002.5	0.3	2	25	9	1700.0	1709.3	37	3
6	3	2141.2	2141.2	0.6	2	25	2	1810.0	1814.0	15	2
6	3	2143.9	2143.9	0.3	3	25	3	1923.8	1923.8	0.3	2
6	3	2153.1	2153.1	0.1	2	25	3	1950.0	1951.0	2.0	3
7	7	2030.0		228 D	2	25	2	2030.0	2031.0	3.0	3
8	3	2032.0	2032.7	1.2	2	25	2	2039.9	2040.0	4.1	3
11	3	1219.9	1219.9	0.4	2*	25	9a	2045.0	2047.0	11	3
11	3	1306.8	1306.8	0.1	2	25	9b	2056.0	2110.8	51	3
11	3	1318.8	1318.8	0.3	2	25	9c	2146.0	2150.0	29	2
11	3	1452.1	1452.1	0.9	2	26	3	0103.3	0103.3	0.3	2**
11	3	1456.5	1456.5	0.6	2	26	6	1125 E		895 D	3
11	3	1534.1	1534.1	0.8	2	26	3	1159.0	1200.5	2.0	2*
11	3	1644.6	1644.6	0.9	2	26	9a	1350.0	1400.0	16	3
11	3	1730.5	1731.0	1.2	2	26	9b	1406.0	1407.0	5	2
11	3	1758.5	1758.5	0.2	2	26	3	1659.6	1701.0	2.4	3
13	3	0029.0	0029.0	0.4	2	27	9a	0005.0	0013.8	10	3
13	3	0032.2	0032.2	0.2	2	27	9b	0015.0	0019.5	40	3
13	3	1216.0	1217.5	2.0	2*	27	3	1148.0	1149.9	2.6	3
13	3	1606.2	1606.2	0.1	1	27	3	1402.0	1402.5	1.0	3
13	2	1708.9	1709.8	4.9	2	27	3	1433.8	1433.8	0.2	2
14	3	0004.5	0005.0	0.8	2	27	6	1730 E	2204	531 D	3
14	2	0006.5	0009.9	5	3	27	9	2146.0	2155.5	74	2
14	3	0205.9	0206.2	0.5	2**	28	6	1601 E		145 E	2
14	3	1215.0	1215.0	0.6	1*	28	8	1215.0	1216.0	9	2*
16	3	0143.5	0143.5	0.4	2**	30	3	1319.5	1319.8	1.0	3
16	3	0155.6	0155.6	0.2	2**	30	3	1510.0	1511.0	1.5	2
18	3	1745.8	1745.8	0.5	2	30	3	1725.0	1725.0	0.3	2
18	2	1750.0	1750.8	2.0	2						

\* On sunrise pattern.  
 \*\* On sunset pattern.

COMMERCE - STANDARDS - BOULDER



## TIMES OF OBSERVATIONS

## BOULDER

June 1960	U.T.	June 1960	U.T.
1	1132-0207	18	1300-1423 I 2015-2200
2	1128-1445		1438-2200 I 2324-0130
	1612-0209		2324-0219
3	1131-0209	19	1129-0219 I 2230-0045
4	1130-0212 I 0000-0152	20	1130-0219
5	1130-0212 I 1130-1510	21	1130-0219
	I 1715-2130	22	1130-0220
6	1130-0211	23	1130-2224 I 1925-2224
7	1130-0211		2304-0220 I 2304-0220
8	1130-0215 I 1630-2245	24	1130-0220 I 1130-1915
9	1130-0215 I 1845-0100	25	1130-0220
10	1130-0215 I 1915-2200	26	1125-0220
11	1129-0215 I 1845-0145	27	1132-1452
12	1128-0215 I 1830-2100		1730-0221
13	1128-0216	28	1130-1330
14	1128-0217 I 2115-2200		1601-1826
15	1126-0217	29	1315-1400 I 1600-0219
16	1206-0218 I 2100-2350		1515-0219
17	1132-0218 I 2100-0005	30	1132-0220 I 1515-0220

COMMERCE - STANDARDS - BOULDER

## GEOMAGNETIC ACTIVITY INDICES

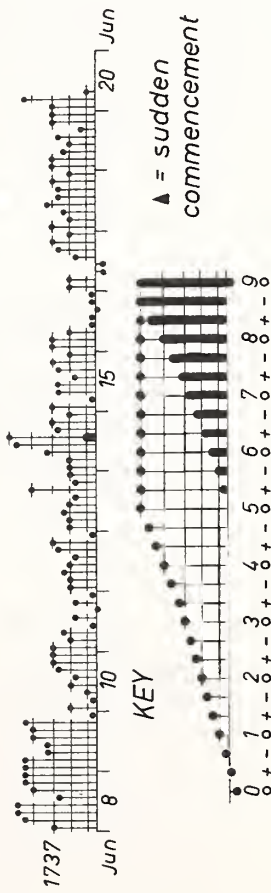
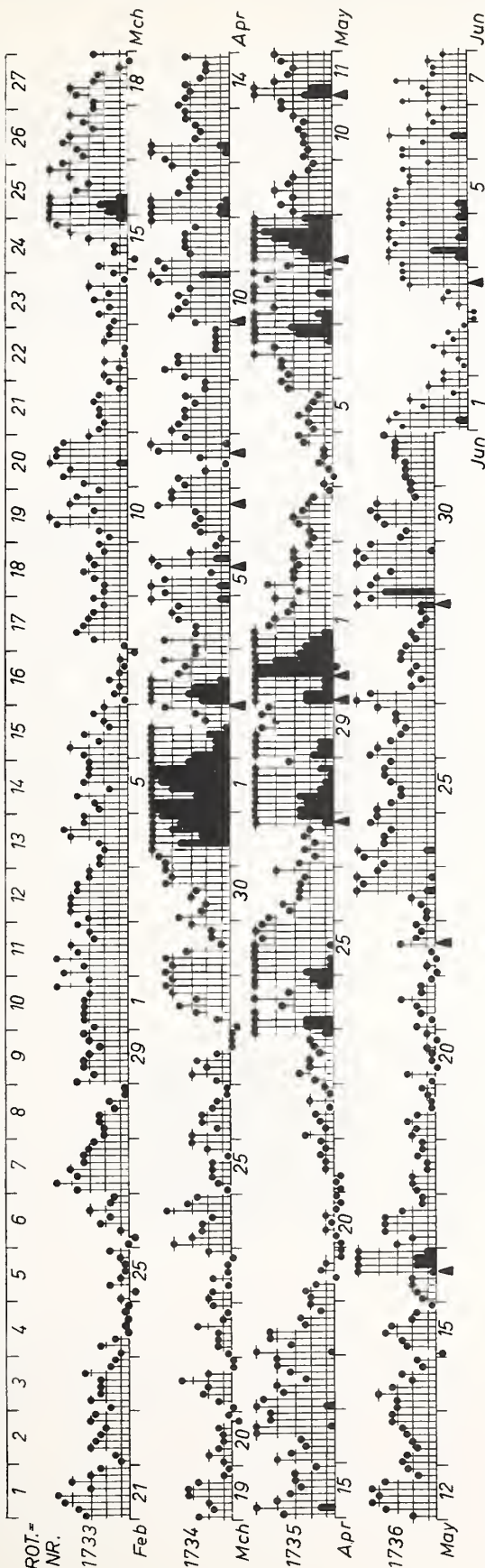
MAY 1960

May 1960	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	1.4	7-	6+	6-	4+	4o	3+	3o	4o	37+	49	Five Quiet	
2	0.7	3-	4+	3o	3o	3-	3o	3o	2o	24-	15		
3	0.3	2-	2o	3-	3o	2+	2o	2-	1-	16o	8		
4	0.2	1o	0+	1-	1+	1o	1o	2+	3-	10+	5		4
5	0.5	2-	2o	3-	2o	2-	1+	3+	4-	18+	10		18
												19	
6	1.6	3+	4-	4-	5o	4o	5+	7o	7+	39+	60	20	
7	1.5	6-	6o	4o	5o	6o	5o	4+	5+	41+	55	22	
8	1.9	3+	6+	7-	7+	8o	8+	6+	7-	53o	128		
9	1.0	3o	4-	3o	4o	3+	3o	2o	2-	24-	16		
10	0.7	2+	2o	2+	2+	3-	2+	3o	4-	21-	12		
11	1.3	4-	7-	6+	4o	3+	3o	4-	4o	35-	42	Five Disturbed	
12	1.0	2o	4-	4+	4o	4+	4-	2-	2+	26o	20		
13	0.7	3-	2+	2-	2o	2+	3-	3+	3+	20+	11		
14	0.7	3o	3o	4o	3+	2o	3-	1+	2-	21o	13		1
15	0.6	0o	2+	3-	4-	3+	2o	2-	1-	16+	10		6
												7	
16	1.3	1+	2-	2o	2o	5+	6+	6+	6-	31-	42	8	
17	0.9	3o	2o	4-	4-	4-	3-	1+	1+	21+	14	29	
18	0.2	2-	2o	2o	1o	1o	2-	1+	1+	12o	6		
19	0.2	2o	2-	2+	2-	1-	1-	1o	1+	11+	5		
20	0.1	1-	2+	0+	1-	1-	1o	0+	1o	7o	4		
21	0.2	2-	1-	1+	2-	3-	1+	1+	1-	11+	6	Ten Quiet	
22	0.3	0+	1o	0+	1-	3-	2-	1+	2-	10-	5		
23	1.1	1o	1o	1+	2o	6-	5-	5+	4o	25o	26		
24	1.2	4-	5-	6-	4-	4-	3+	4+	4o	33o	31		3
25	1.1	4o	3+	3-	3-	3+	4-	4-	3+	27-	19		4
												5	
26	1.1	4+	4o	3+	3-	2+	3o	3o	4o	27-	19	13	
27	0.9	5o	4+	2o	1+	2o	2-	3-	3-	22-	16	15	
28	0.9	2+	2-	2o	1+	1o	1+	6o	4+	20o	18	18	
29	1.6	8-	4+	4o	3+	5o	5-	5+	4+	39-	54	19	
30	1.1	3-	2+	4-	4o	4+	4o	2-	2o	25-	18	20	
31	0.9	2o	2+	2+	2+	3o	3o	3o	4-	22-	13	21	
												22	
Mean: 0.88										Mean: 24			



DAYS IN SOLAR ROTATION INTERVAL

ROT. #  
NR.



▲ = sudden commencement

# PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1960 May 31

(Ks from Wingst and Göttingen till 1960 June 20)

J.B.

COMMERCE - STANDARDS - BOULDER

# CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

## NORTH ATLANTIC

MAY 1960

May 1960	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by:				Geomag- netic K <sub>Fr</sub>		
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-7 days Final	1-7 days Js	1-3 days SDW	1-7 days J	Half Day (1) (2)		
1	2-	3+	5-	5-	1	1	4	5	(3+)	3	3		7	(5)	3	
2	5+	4+	6-	6+	5	5	6	6	5+	5	5		7	3	3	
3	7-	4+	6o	6+	6	6	6	6	6-	6	6		7	3	2	
4	7-	6o	6+	6+	6	5	6	6	6+	6	6		7	0	2	
5	7-	6+	6o	7-	6	6	6	6	6+	5			5	2	3	
6	7-	5o	5o	4+	7	6	5	6	5o	4			4	(4)	(5)	
7	3+	4-	5-	5-	2	3	5	5	(4o)	4			4	(5)	(4)	
8	5o	2+	4-	4-	4	2	2	2	(3+)	4			4	(6)	(6)	
9	3+	4-	5+	6o	3	3	5	5	(4+)	5			5	(4)	2	
10	6+	4+	6+	6+	6	5	6	6	6-	5			5	3	3	
11	6-	2+	5o	6-	6	4	4	5	(4+)	6			6	(5)	3	
12	6-	4+	4-	6o	5	5	5	5	5-	5			5	3	3	
13	6+	6-	6+	6+	6	5	6	6	6o	6			6	2	3	
14	6o	5o	6o	6+	6	5	5	6	6-	4		4	6	(4)	2	
15	7-	6+	6o	7-	6	6	6	6	6+	3		3	6	2	2	
16	7-	6o	6o	6o	7	6	6	4	6+	4		4	7	2	(6)	
17	6+	5+	5+	6o	4	5	6	5	6-	4	4		7	3	3	
18	6+	6-	6o	6+	5	5	6	6	6o	6	6		7	2	1	
19	7-	6-	6+	7-	6	6	6	6	6+	6			6	2	1	
20	7-	5o	6o	7-	7	6	6	5	6o	6			6	1	1	
21	7o	6o	7-	7-	5	5	6	6	7-	4			4	2	2	
22	7-	7-	7-	7-	6	6	6	6	7-	4			4	0	3	
23	7o	6+	7-	6+	7	6	6	5	7-	5			5	1	(5)	
24	6o	4+	6-	6-	5	5	5	6	5o	6			6	(4)	3	
25	5o	4+	6o	7-	5	3	6	6	5+	6			6	3	3	
26	6-	4+	6o	6+	6	5	6	6	5+	5			5	(4)	3	
27	6-	5o	6+	7-	6	5	6	6	6o	6			6	2	3	
28	7-	6-	7-	7-	6	6	7	7	6+	6			6	3	3	
29	5+	5o	7-	6+	6	4	5	6	6-	7			7	(5)	(5)	
30	6o	5-	6o	6+	5	5	5	6	6-	7			7	(4)	3	
31	6o	5+	7-	7-	6	5	6	6	6o	7			7	3	3	
Score: Quiet Periods																
					P	13	11	18	14					11	9	
					S	13	8	10	13					8	13	
					U	1	0	1	1					1	2	
					F	1	0	0	1					6	2	
Disturbed Periods																
					P	1	1	0	0					2	1	
					S	2	8	1	0					2	2	
					U	0	2	1	1					0	0	
					F	0	1	0	1					1	2	

( ) represent disturbed values.

All times are Universal time (UT).

COMMERCE - STANDARDS - BOULDER

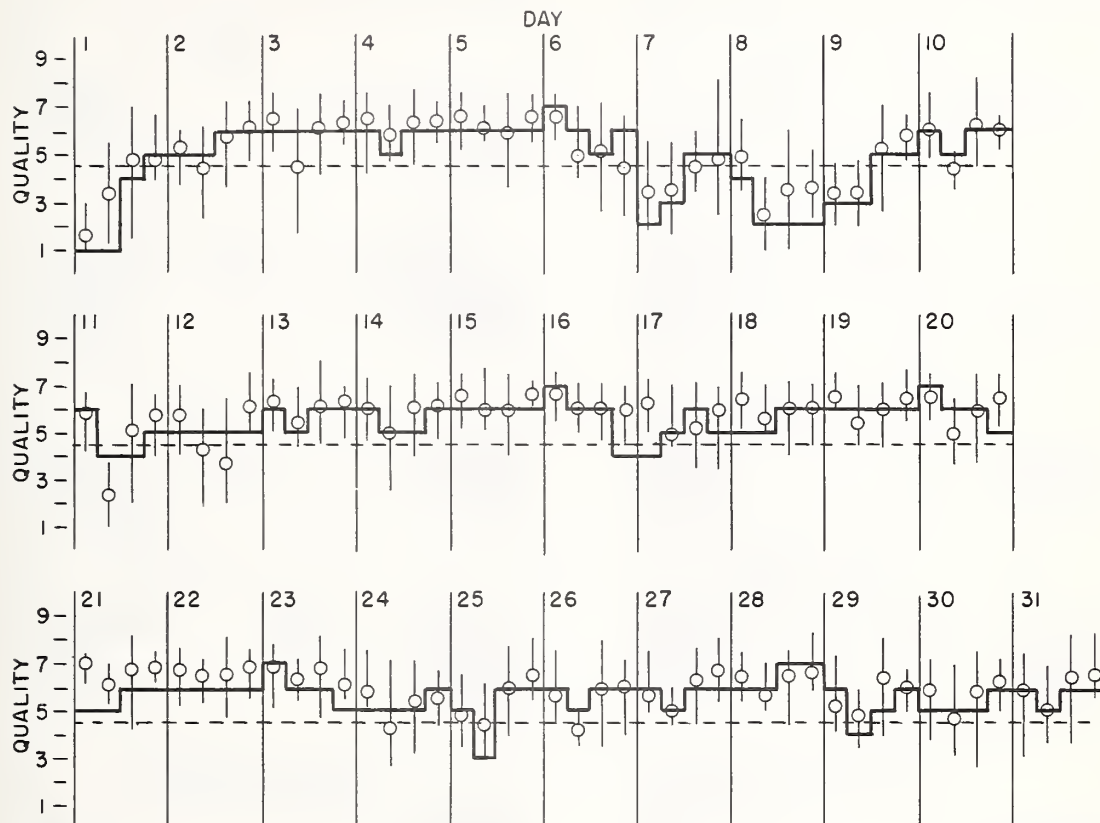
## NORTH ATLANTIC

MAY 1960

— Short-term forecast

| Range of reports

o Quality figure

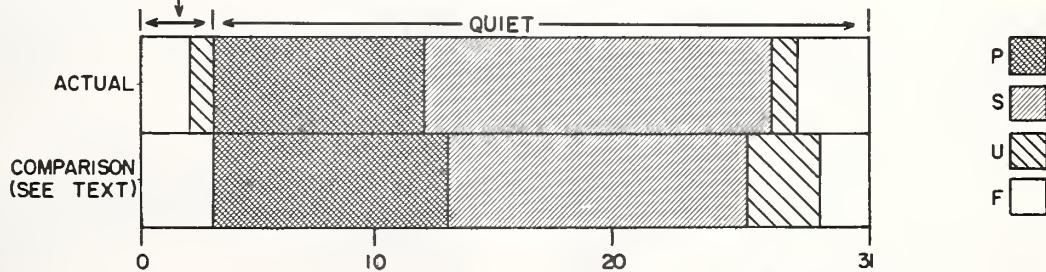


OUTCOME OF ADVANCED FORECASTS

FINAL ESTIMATE

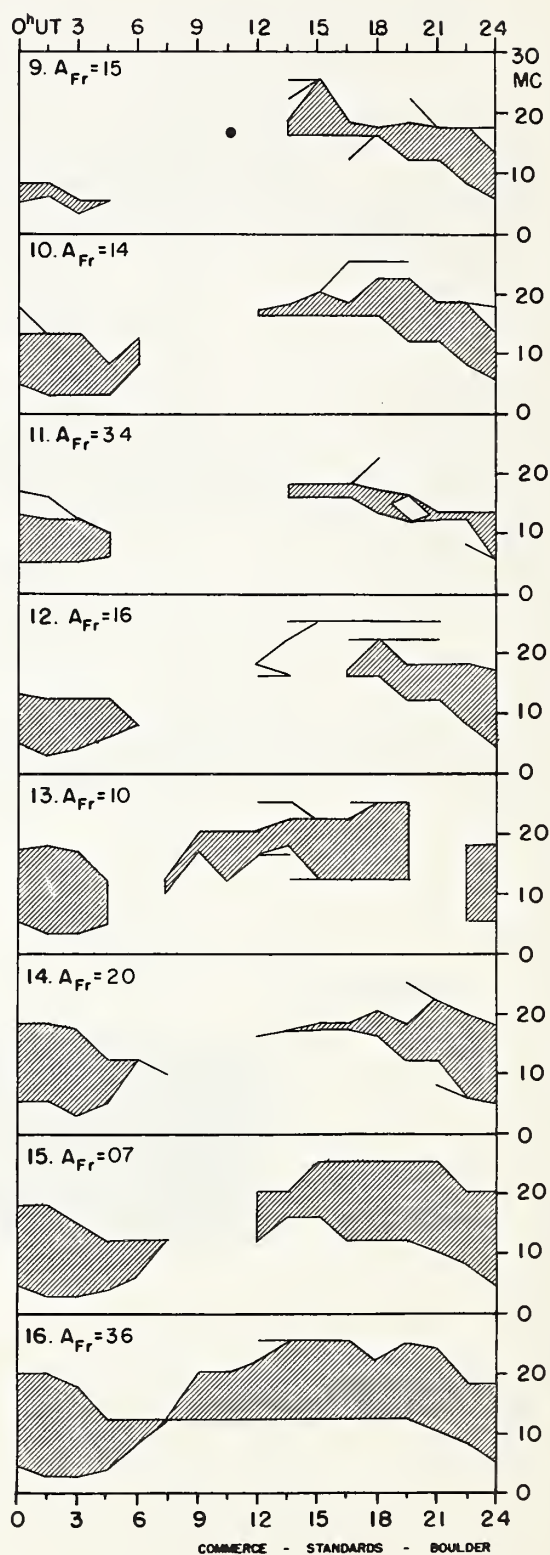
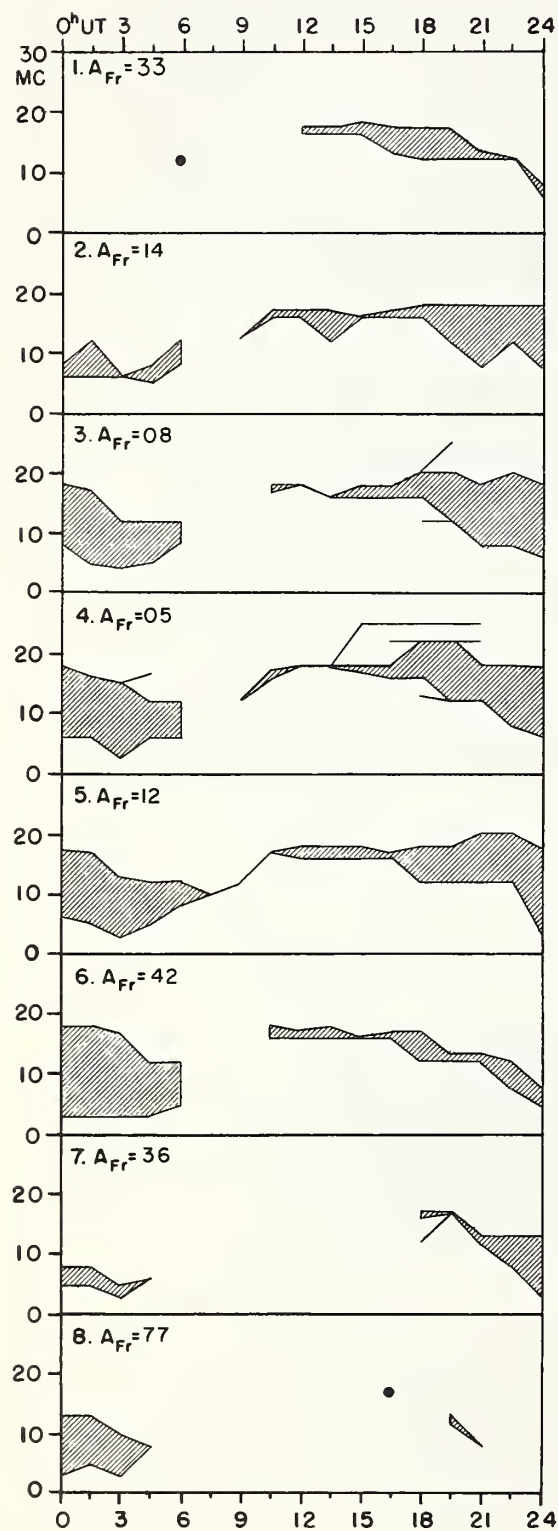
DISTURBED

QUIET

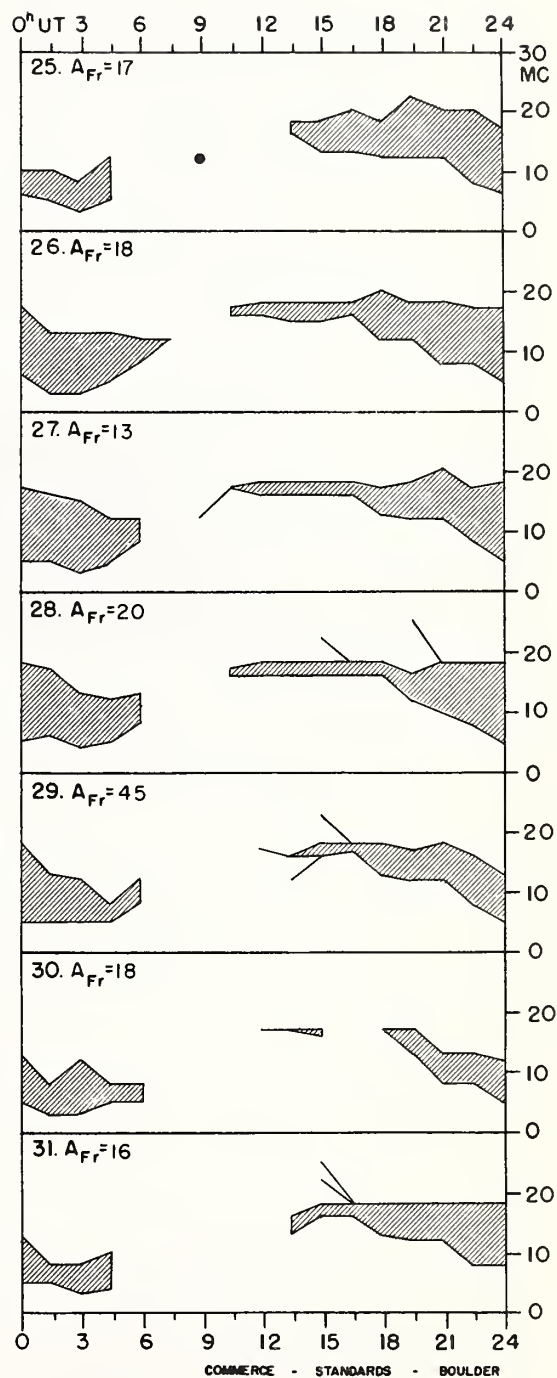
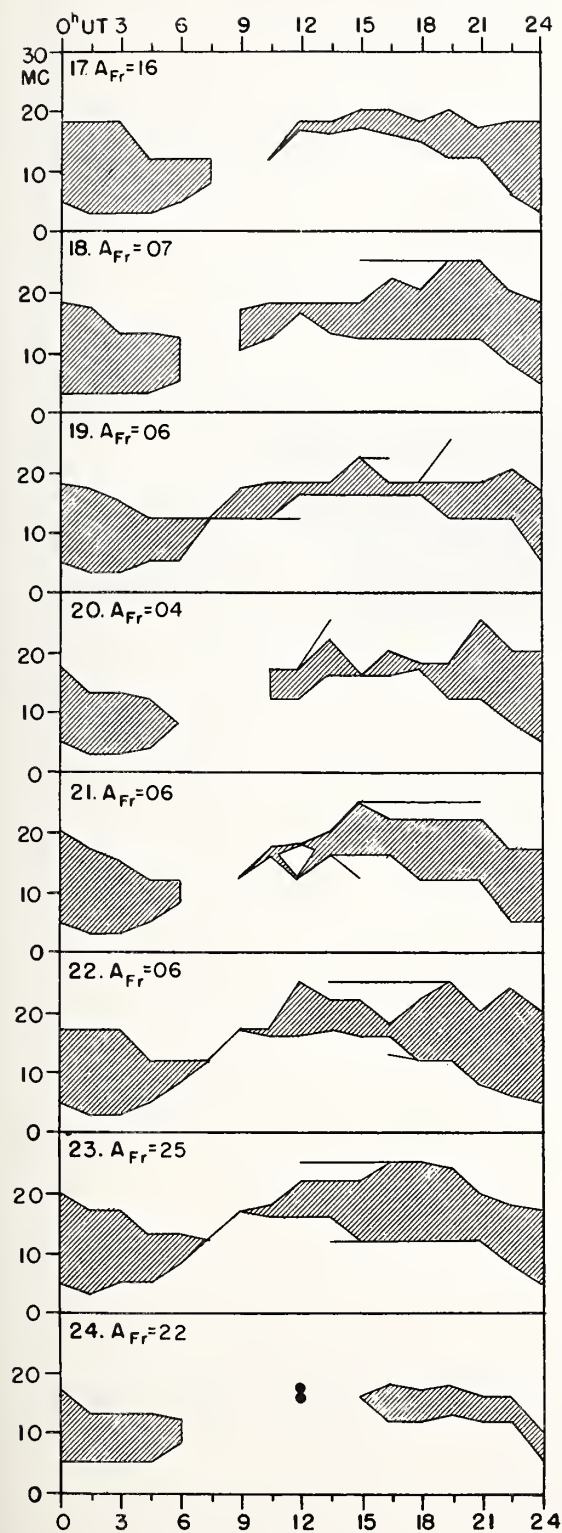


COMMENCE - STANDARDS - BOULDER

MAY 1960









## CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

## NORTH PACIFIC

MAY 1960

May 1960	North Pacific 12-hourly quality figures		Short-term forecasts issued at		Whole day index	Advance forecasts (Jp reports) for whole day; issued in advance by:				Geomagnetic K <sub>SI</sub>	
	0700 to 1900	1900 to 0700	0600	1800		1-7 days Final	1-7 days Jps	1-3 days SDW	1-7 days Jp	Half Day (1)	Day (2)
1	5	5	4	5	(4)	2		2	5	(5)	3
2	5	6	5	6	6	4		4	6	3	2
3	6	6	6	5	6	6	6		6	3	1
4	6	6	6	6	6	6	6		6	1	2
5	6	6	6	7	6	5			5	2	3
6	5	4	6	5	5	4			4	(4)	(6)
7	5	5	3	5	(4)	6			6	(6)	(4)
8	2	4	3	3	(2)	6			6	(5)	(7)
9	5	5	5	6	5	6			6	3	3
10	6	5	6	6	6	6			6	2	3
11	5	4	3	6	5	6			6	(6)	3
12	6	5	5	6	5	5			5	(4)	3
13	6	6	6	6	6	5			5	2	2
14	6	6	6	6	6	5		5	6	3	2
15	6	6	6	5	6	3		3	6	2	2
16	6	6	7	7	6	4		4	6	2	(4)
17	6	7	6	7	6	5	5		6	3	2
18	6	5	7	7	7	6	6		6	2	2
19	6	5	7	7	6	7			7	2	1
20	6	7	7	6	6	7			7	0	1
21	7	7	7	7	7	5			5	1	2
22	6	5	7	7	6	5			5	0	2
23	7	6	7	7	7	6			6	1	(4)
24	6	6	5	6	6	6			6	(4)	(4)
25	6	6	6	6	6	6			6	(4)	(4)
26	6	6	5	6	6	6			6	(4)	3
27	6	6	6	7	6	6			6	(4)	2
28	7	7	6	6	7	6			6	2	2
29	4	5	4	5	5	6			6	(4)	(4)
30	5	6	6	5	5	6			6	(4)	3
31	6	6	5	6	6	6			6	2	2
Score:		Quiet Periods		P 14	13	9					
				S 13	12	15					
				U 0	3	1					
				F 2	0	3					
		Disturbed Periods		P 1	0	0					
				S 1	2	0					
				U 0	0	1					
				F 0	1	2					

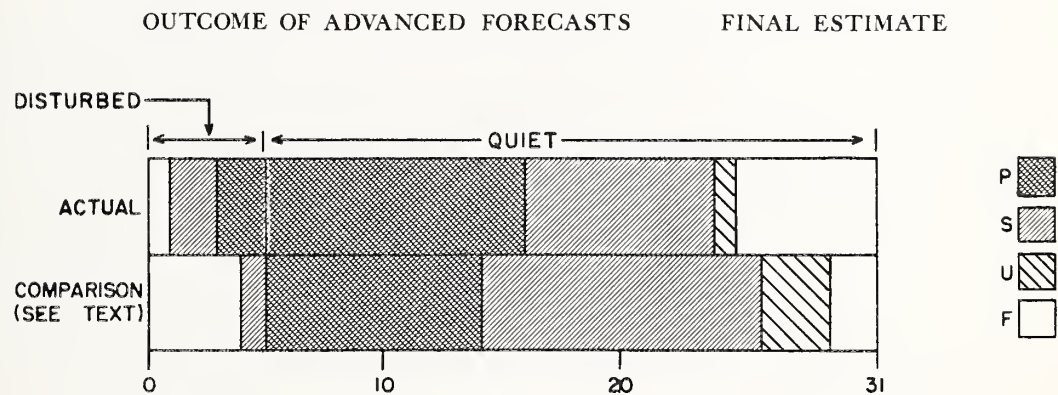
( ) represent disturbed values.

All times are Universal time (U.T.)

COMMERCE - STANDARDS - BOULDER

## NORTH PACIFIC

MAY 1960



## ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL WORLD DAY SERVICE

JUNE 1960

Issued Day/Time UT June 1960	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Interval
4/0532	Ft. Belvoir, Magnetic Storm 04/02XXZ			
4/1600		71	Magnetic Storm 04/02XXZ	Start Special World Interval
5/1600		72		Continue Special World Interval
6/1600		73		Finish Special World Interval
11/0415	Burbank, Solar Flare 11/0120Z			
25/1445	Sacramento Peak, Solar Flare 25/1250Z			
27/0433	Ft. Belvoir, Magnetic Storm 27/0145Z			
27/1600		74	Magnetic Storm 27/0145Z	
29/1957	Ft. Belvoir, Magnetic Storm 29/1937Z			
29/1600		75	Magnetic Storm 29/1937Z	

COMMERCE - STANDARDS - BOULDER



